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Case No: HP-2019-000032

IN THE HIGH COURT OF JUSTICE
BUSINESS AND PROPERTY COURTS OF ENGLAND AND WALES
INTELLECTUAL PROPERTY LIST (ChD)
PATENTS COURT

Rolls Building Fetter Lane,
London, EC4A 1NL

Date: 4th July 2023

Before :

THE HON MR JUSTICE MELLOR

Between :

- (1) INTERDIGITAL TECHNOLOGY CORPORATION
(2) INTERDIGITAL PATENT HOLDINGS, INC.
(3) INTERDIGITAL, INC.
(4) INTERDIGITAL HOLDINGS, INC.

Claimants

- and -

- (1) LENOVO GROUP LIMITED
(2) LENOVO (UNITED STATES) INC.
(3) LENOVO TECHNOLOGY (UNITED KINGDOM)
LIMITED
(4) MOTOROLA MOBILITY LLC
(5) MOTOROLA MOBILITY UK LIMITED

Defendants

Adrian Speck KC, Mark Chacksfield KC, Isabel Jamal, Thomas Jones and Edmund Eustace (instructed by **Gowling WLG**) for the **Claimants**
Daniel Alexander KC, James Segan KC, Ravi Mehta and William Duncan (instructed by **Kirkland & Ellis International LLP**) for the **Defendants**

Hearing dates: 13th-14th, 17th-21st, 24th-28th & 31st January, 2nd-3rd, 8th-11th February 2022
Further evidence 7th & 13th December 2022. Further submissions 13th January 2023.
Draft Judgment sent to the parties 1st March 2023

**APPROVED JUDGMENT – REVISED PUBLIC
VERSION**

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Mr Justice Mellor:

1. This is my judgment from the FRAND trial in this action. It is organised as follows:

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NOTES CONCERNING THIS JUDGMENT

2. There are two versions of this FRAND Judgment: the full version [2023] EWHC 538 (Pat), which comprises 225 pages, is available only to the parties and those in the appropriate level of the confidentiality regime because it contains a considerable amount of information confidential to one of the parties and/or third parties. It was handed down on 16th March 2023, along with an initial public version of that Judgment [2023] EWHC 539 (Pat). Subsequently, I received submissions from the parties and a wide range of interested parties, resulting in my judgment on the confidentiality issues [2023] EWHC 1577 (Pat). This revised public judgment implements the decisions I made in that judgment on the confidentiality issues. There are two points I should mention. First, as I explained in that Judgment at [12] and [52], before issuing the 539 Judgment, I took a robust view of claims to confidentiality to ensure that the public version of my FRAND Judgment set out the important parts of my reasoning, with the consequence that I have removed relatively few of the redactions in this revised version. Second, there was particular attention paid to one particular diagram (X1) at [586] and various tables, including one at [577]. Although the full diagram and table remain confidential, I decided I could reveal some limited information without causing harm to those claiming confidence. In relation to X1 at [586] and the table at [577], added text is set out in *italics*. That apart, redactions made to various diagrams are evident. Redactions in the text are indicated (for the National Archives) [REDACTED] or by the abbreviation [RED] to preserve formatting. Any attempts to estimate or reverse-engineer figures by reference to the size of the redaction would be unwise since there is no correspondence.
3. To aid understanding, in the Annex I have set out the paragraph in the Judgment where various terms and abbreviations used by the experts in the comparables analysis are defined.

INTRODUCTION

4. This litigation is essentially a dispute between the Claimants (who I shall refer to as InterDigital¹) and the Defendants (Lenovo) as to the terms on which Lenovo should take a licence to InterDigital's portfolio of Patents which have been declared essential (i.e. Standard Essential Patents or SEPs) to the European Telecommunications Standards Institute (ETSI) 3G, 4G and 5G Standards. The proceedings were case managed into 6 trials: five technical trials and this FRAND trial. The purpose of this FRAND trial is to identify what terms are **Fair, Reasonable And Non-Discriminatory**.
5. When this FRAND Trial occurred, two out of the five planned Technical Trials had taken place. InterDigital prevailed in Trial A and the Court of Appeal has recently dismissed Lenovo's appeal: [2023] EWCA Civ 34. Lenovo prevailed initially in Trial B, although my decision in that trial has very recently been overturned: see [2023] EWCA Civ 105. Three further Technical Trials were scheduled after this FRAND/Non-Technical Trial, and indeed I have heard Trials C and D. InterDigital have prevailed in Trial C and no appeal has been filed. I aim to deliver judgment in Trial D shortly. It remains to be seen whether Trial E is required. At the time of the trial, InterDigital had established their right to a FRAND determination and their position has only been strengthened by subsequent events.
6. The parties identified two headline issues for me to determine:
 - i) The first was whether InterDigital's January 2020/5G Extended Offer is FRAND and if not, what terms are FRAND for a licence to Lenovo of the InterDigital patent portfolio? This headline issue resolved into two major parts: first, the comparables case and second, the top-down cross-check. These are familiar concepts.
 - ii) The second was what remedy is appropriate and in particular, whether InterDigital is entitled to an injunction in respect of the 'Asserted Patents' (and if so, in what form), in so far as the Asserted Patents are held valid and essential? This issue resolved into three parts: first, whether Lenovo was a willing licensee during the extensive negotiations which occurred prior to the commencement of this action; second, was InterDigital a willing licensor during those negotiations; third, the consequences of Lenovo's failure to commit to take a FRAND licence.
7. On the second headline issue (which needs a little more introduction), InterDigital maintained that Lenovo is not entitled to enforce the ETSI undertaking, because they did not fall within the class of beneficiaries of the ETSI undertaking, as defined by Meade J. in *Optis F*. InterDigital maintained this case on two separate bases:

¹ Part of the reason is to distinguish clearly between the Claimants and IDC (International Data Corporation), an important source of data concerning the cellular market. The experts tended to refer to the Claimants as IDC or IDG in their reports.

- i) The first was termed ‘the fact sensitive case’, in which InterDigital relied on Lenovo’s alleged general conduct in negotiations. InterDigital alleges that Lenovo adopted at all material times a strategy of deliberate hold-out and that their conduct demonstrates that Lenovo has – despite protestations to the contrary – had no intention to work the standard under a licence from InterDigital. Accordingly, so InterDigital’s case goes, Lenovo have not been and are not a beneficiary of the ETSI undertaking. On this basis, InterDigital sought an unqualified injunction against Lenovo.
 - ii) The second was termed ‘the fact insensitive case’, in which InterDigital relied upon the two alternative ways in which Meade J. found Optis to be entitled to injunctive relief in *Optis F* at [285] and at [288]/[341]. InterDigital says each of those two ways apply here and do not depend on or require any finding of fact as to Lenovo’s conduct. On this basis, InterDigital sought a FRAND injunction.
8. Lenovo’s counter-attack on the fact sensitive case was their allegation that InterDigital had not conducted themselves in negotiations as a willing licensor. More broadly, Lenovo submitted that, when assessing the remedies for InterDigital, the Court should have regard not only to Lenovo’s behaviour but also InterDigital’s throughout the negotiation process. Lenovo’s argument was that a SEP licensor cannot for years and years only offer supra-FRAND rates and conduct themselves to try to extort supra-FRAND rates from licensees and then purport to overwrite that behaviour retrospectively by agreeing to the Court-determined FRAND rate, whilst casting the blame on others. More specifically:
 - i) Lenovo alleged that every offer InterDigital made to Lenovo was at multiples of the rates they were offering and agreeing with other substantial entities during the same period. Lenovo characterises this as an act of discrimination particularly focussed on Lenovo. Lenovo says this got worse when InterDigital took unreasonable positions in the lead-up to and in the context of this litigation. InterDigital’s offers went up and InterDigital attempted to support them by adopting an unsupportable set of comparables. Lenovo also point out (correctly) that the very licences which InterDigital put forward as comparables during negotiations were not included in the comparables adopted for this case.
 - ii) Lenovo also allege that InterDigital’s whole licensing ‘programme’ was unreasonable and non-FRAND because (i) the ‘program rates’ were not updated from 2012-2020 despite licences being routinely granted below those ‘program rates’ (ii) forcing negotiations to be wholly cloaked by NDAs to avoid any transparency in respect of its licensing programme (iii) refusing to give transparent information or assurances about other licensees for years and (iv) providing huge volume discounts to discriminate intentionally against smaller players.
9. I emphasise that so far I have been summarising various *allegations* made by one side against the other. Whether any of them are justified and if so, to what extent, are points I consider later.

10. I found the notion that InterDigital really wanted an unqualified injunction against Lenovo to be unreal. As I remarked during the trial, the only reason InterDigital was trying to obtain an injunction against Lenovo was to force Lenovo to take a licence. In fact, the last thing that InterDigital as a SEP licensor wants is to take an implementer off the market. They want the implementer on the market, selling products which are standard compliant and paying royalties on them.
11. I also found the notion that InterDigital might be *entitled* to an unqualified injunction against an implementer like Lenovo to be unreal, unless Lenovo had unequivocally refused to take a FRAND licence. I shall explain my view in greater detail below, but there is a very simple reason for it. InterDigital's undertaking to ETSI is 'irrevocable'. InterDigital cannot revoke its undertaking to license on FRAND terms, whether generally or in respect of any particular implementer.
12. InterDigital's arguments about injunctive relief, it seems to me, are driven not by a desire to keep Lenovo's standard compliant products off the market (i.e. in the future) but much more by a desire to obtain recompense for the long period during which Lenovo has been selling standard-compliant products and not paying any royalties to InterDigital. On the current state of this action, ever since judgment was handed down in Trial A regarding EP558, Lenovo has continued to infringe a valid patent. Furthermore, it has managed to avoid, through various tactics, making any unqualified commitment to take whatever FRAND terms are determined by this Court. Understandably, InterDigital points to this latest conduct as simply further hold-out by Lenovo. More generally, a strong theme running throughout InterDigital's case is that Lenovo benefits from any delay. This theme chimes with the way in which each side suggested that past events should be dealt with, a point I consider in much more detail later.
13. It is worth recording my rather basic understanding of how it comes about that an implementer like Lenovo is able to use the standardised technology, perhaps for many years before being licensed to use it. The development of each generation of standardised mobile phone technology has been part of a remarkable success story taking years of collaborative effort by the many companies involved and their highly skilled individual engineers. At a particular point in the development, various specifications which make up a particular release of an overall standard are frozen. Development usually continues, with additional features being added in later releases, but the freezing of specifications is an important step which, in time, leads to products being launched onto the market embodying a particular release/generation of technology, of which the principal generations, 2G, 3G, 4G and 5G are well-known. As Mr Brismark touched upon in his evidence, originally companies made their own chipsets which implemented the 2G standardised technology. Perhaps not surprisingly, that model was not sustainable and soon just a few specialised chipset manufacturers came to dominate the market. As I understand matters, each manufacturer developed and marketed a range of chipsets which provided a range of features, but all implemented, for example,

3G technology as set out in the various ETSI specifications. That was the whole point.

14. In practice therefore, any company wishing to make a 3G mobile phone could do so by purchasing an appropriate 3G chipset. So too, with 4G and 5G. Some, but not all of the technology utilised in each generation is covered by patents. Again, some but not all of those patents cover technology which is considered to be or is in fact essential to the operation of the standard. Other patents cover technology which is not essential but may be optional and desirable to include. A very considerable number of patents have been declared to a Standard Setting Organisation (SSO) to be essential, the number increasing with each generation. Over-declaration is a known issue.
15. However, by manufacturing mobile devices incorporating purchased chipsets which embody the technology set out in the relevant standard, an implementer is able to start using the standardised technology before it has obtained the necessary licences to all the SEPs which are essential to the standard. As the history of this case demonstrates, many years can pass before an implementer takes a licence and the treatment of past (unlicensed) sales is a major issue in the comparables part of the case.
16. This brief overview explains, I hope, why I have divided this judgment into three major sections in which I deal with first, the comparables case, second, the top-down analysis and third, the allegations regarding conduct. I propose to deal with those matters in that order for two main reasons: first, because it is clear that the comparables analysis is the primary if not exclusive indicator of the appropriate FRAND financial terms, the top-down analysis being deployed by InterDigital only as a cross-check; and second, because I believe that the various allegations as to conduct can only really be assessed against the backdrop of my conclusion as to the appropriate FRAND terms. It is those terms which will help me to identify whether InterDigital or Lenovo made FRAND offers, whether InterDigital was making unreasonably high demands, whether Lenovo unreasonably refused to engage at various points, and generally the causes of the inability of these two parties to reach a deal during the 11 years between first contact between the parties and the issue of this claim by InterDigital.
17. Naturally before embarking on those sections, I need to orient myself correctly. I am able to do this with the considerable assistance I can derive from the existing caselaw in the UK, by paying attention to existing caselaw in both the US and China and by identifying further points which emerge from the ETSI materials which are applicable to the circumstances of this case. Before I can explain how the existing caselaw assists me, it is necessary to set out, in much more detail, the basis of the disputes which I have to resolve.
18. The final point I wish to make by way of introduction is that I have left entirely out of account any views I formed of the validity or significance of individual patents considered at any of the Technical Trials. I have had to consider just three of InterDigital's patents in those trials. It would be wrong to allow my views on just three patents to influence, one way or another, the licensing of InterDigital's entire portfolio of patents said to be standard and essential.

THE SCOPE OF THIS DISPUTE

19. Although it will be seen later that over the years InterDigital made a number of offers (actually 14) to Lenovo, and Lenovo made a limited number (2) of counter-offers, a total of four offers were pleaded to be FRAND – two from each side –but the trial concentrated on the following two.
20. The first offer was referred to as the ‘**5G Extended Offer**’. Although the full terms of the offer are more complicated, InterDigital summarised it as follows:

The 5G Extended Offer	
Scope	Worldwide, 2G (past sales only), 3G, 4G and 5G patents
Licensed products	3G, 4G and 5G terminal units
Term	6 years (commencing 1 January 2018)
Royalty	By standard rates: 5G: 0.54% of ASP, where the ASP is subject to a cap of \$200 cap and a \$60 floor 4G: 0.45% of ASP, where the ASP is subject to a \$200 cap, and a \$50 floor 3G: 0.36% of ASP, where the ASP is subject to a \$100 cap, and a \$40 floor
Release	Full, upon payment for past sales at above rates
Discounts embedded	5% term discount 5% regional sales mix discount
Discounts available	Volume discount: 10% per 20M units sold applied progressively, up to a maximum 70% discount for sales over 140M units in a calendar year. Time value of money discount: 10% per year prepaid. Fixed payment discount: 4% per year pre-paid (to a maximum 20%).

21. This offer embodies the ‘program rates’ which InterDigital has published on its website since early 2020, as part of its ‘transparency’ initiative. It should be noted that the stated royalty rates reflect the embedded discounts, hence the stated 4G ‘program rate’ is 0.5% for example.
22. I should add that in its oral opening, InterDigital agreed that the Court should determine a lump sum. In his fourth report, Mr Bezant (the accountancy expert

called by InterDigital) calculated the lump sum from the 5G Extended Offer as \$337m, made up as follows:

Table 2-1: Lump sum amounts implied by IDG's 5G Extended Offer, \$ million

	Past	Future	Total
3GMM	85	0.3	85
4GMM	114	99	213
5GMM	0	39	39
Total	199	138	337

Source: Appendix 31.

23. It is obvious that the past makes up a very substantial proportion of any overall lump sum (about 2/3, in Mr Bezant's calculation). In his lump sum calculation, Mr Bezant worked on the basis that the licence would have an effective date of 1 January 2018 (albeit signed on 1 January 2023) with a six-year term ending on 31st December 2023, with Lenovo paying royalties on sales up to six years prior to the effective date (i.e. from 1 January 2012). The total handset sales in his Appendix 31 amount to 675.7m units (accepting there may be an error in the total caused by rounding in App31). Thus, the total of \$337m indicates a blended per unit dollar rate of \$0.498. On these figures, each cent in the rate accounts for roughly \$6.6m.
24. At first sight, the choice of 1 January 2018 as the effective date appears random, having no relation to the commencement of this action in August 2019 nor any other immediately relevant date. It is explained by the terms of the 5G Extended Offer which is specified as having an effective date of 1 January 2018 (in common with InterDigital's November 2018 offer, see below). I assume InterDigital favour this effective date because it allows them to reach back to include sales from 1 January 2012, on an apparent assumption that a 6-year limitation period applies.
25. Mr Meyer (the accountancy expert called by Lenovo) also worked on the basis that the limitation period 'in many jurisdictions' extends back a maximum of 6 years from the date of the start of proceedings. Hence, he considered Lenovo's 'past sales' to be those in the period from Q3, 2013 to (the end of) 2020. He also calculated adjusted figures for the period 2007 to 2020, representing the longest period for which historical sales figures were available, but also reflecting the fact that Lenovo and InterDigital had been negotiating since 2008.
26. The second offer focussed upon at trial was referred to as **Lenovo's Lump Sum Offer**, which was pleaded shortly before trial on 14th December 2021. In essence what is proposed is a lump sum payment of \$80m +/-15% for all sales in the 6-year term to the end of 2023 with a full release for all past sales for no additional consideration. Those basic terms are to be read with Lenovo's mark-up of the lump sum licence terms. The figure of \$80m is chosen as the approximate mid-point of two lump sum figures, namely \$65.4m and \$99.6m, the former being calculated using weighted average past and future rates of \$0.07 and \$0.20 from what Lenovo alleges to be the six most probative comparable licences, and the latter figure being calculated based on a blended rate of \$0.16. On these figures, each cent accounts for approximately \$6.22m.

27. In connection with its Lump Sum Offer, Lenovo draws attention to the ninth offer made by InterDigital in November 2018 and withdrawn in February 2019. That was also a lump sum offer which Lenovo says is consistent with its Lump Sum Offer and supports a finding that its Lump Sum Offer is FRAND. In the November 2018 offer, Lenovo says that InterDigital represented that \$120m was an appropriate part of the overall lump sum to attribute to a 10-year 3G/4G/5G licence from 2018-2028 with a release for all sales prior to 2018. For its part, InterDigital says its offer does not indicate that Lenovo's offer is FRAND. It points out that it was an offer made after 10 years of attritional negotiation, in an attempt to reach a deal.
28. Lenovo's Lump Sum Offer was made after service of Mr Bezant's first and second reports. Understandably, in those reports, Mr Bezant addressed Lenovo's '**Pleaded Case**' which he summarised as follows:
- i) Term: 6 years from date of the agreement.
 - ii) Licensed Standards: 2G, 3G, 4G, 5G.
 - iii) Territory: Worldwide, but incorporating the FRAND/RAND decisions of the US and Chinese courts.
 - iv) Royalty Payments: a per unit rate subject to an annual cap:
 - a) Either a single blended global rate, adjustable for outcomes of the US and Chinese proceedings, no higher than \$0.12 with a 50% reduction for sales in China; or
 - b) A global licence with separate regional rates no higher than: \$0.06 for sales in China, Rest of World, Emerging Markets and non-patent countries; and \$0.12 for sales in the USA and RoW Developed Markets including the UK.
 - v) Past sales: released for no additional payment.
 - vi) Discounts/Other Terms: Most favoured licensee i.e. InterDigital would need to offer to Lenovo the same terms as it grants to any similarly situated licensees in the 12 months following the effective date.
29. Although this Pleaded Case was overtaken and replaced by Lenovo's Lump Sum Offer, this pleaded position does explain some of the analysis which was undertaken.
30. The analysis by each expert of InterDigital's 5G Extended Offer and Lenovo's July 2018 Offer (see further below) illustrates some of the differences between them and the complications to which they can give rise.
31. For his part, Mr Bezant's LERs (Licensee Effective Rate) derived from the 5G Extended Offer were: Past: \$0.50; Future: \$0.57 and Blended: \$0.53.
32. For the 5G Extended Offer, based on IDC data of Lenovo's 2G, 3G, 4G and 5G unit sales, Mr Meyer calculated that Lenovo would pay a per-unit rate of \$0.81,

taking into account the volume discount applicable to 2021 sales. Although not identified as such, this was a future rate only. Mr Meyer calculated that offer to represent a present value (PV) lump sum (LS) payment of \$418.4m.

33. Mr Bezant pointed out in his second report that this was overstated, contending there were four flaws in Mr Meyer’s approach: (i) first, that he had used retail not wholesale Average Selling Prices (ASPs); (ii) second, he had applied volume discounts to the past sales, whereas InterDigital did not apply such discounts to past sales; (iii) third, he had assumed the 4G/5G split would remain constant into the future and (iv) fourth, he had assumed ASPs would remain constant, whereas Mr Bezant said that ASPs were expected to decline over time. There were also differences in the periods which Mr Meyer had considered.
34. It appears the most significant flaw was the use of retail and not wholesale ASP data. Having seen Mr Bezant’s use of wholesale ASP data in his first report, Mr Meyer agreed that was more appropriate and presented, in his second report, revised calculations. So, by the time Mr Meyer read Mr Bezant’s second report, he had already revised his calculations using wholesale ASPs presented in his (Mr Meyer’s) second report. His revised combined rate implied by the 5G Extended Offer was \$0.51.
35. In his second report, Mr Bezant corrected the alleged flaws and presented the following comparison.

Table 7-1: Mr Meyer’s original and corrected blended per unit rates and my Licensee Effective Rates per IDG’s 5G Extended Offer, \$/unit

Period	Mr Meyer’s rates (original)	Mr Meyer’s rates (corrected)	My Licensee Effective Rates
Future	\$0.81	\$0.54	\$0.57
Past	\$0.64	\$0.54	\$0.50
Combined	\$0.69	\$0.54	\$0.53

Note: I calculated Mr Meyer’s corrected past rate across 2012 – 2017, and Mr Meyer’s corrected future rate across 2018 – 2023.

Source: Exhibit PKM-3.2 and Appendix 23: FTI analysis of Mr Meyer’s model, ‘Tables’ tab.

36. Mr Bezant was of the view that the differences which remained (e.g. in their combined rates) were the result of (a) Mr Meyer not applying a prepayment discount, whereas Mr Bezant had done so; (b) the experts using different data sources – Mr Meyer used IDC data and Mr Bezant Strategy Analytics ('SA') data.
37. The other offer which was discussed by the experts was **Lenovo’s July 2018 Offer**, in which Lenovo offered an *ad valorem* (AV) 0.07% rate across all 2G, 3G, 4G and 5G units. Based on Lenovo’s unit sales and the net sale price of Lenovo’s devices, Mr Meyer calculated that the offer amounted to a blended per unit rate of \$0.18 based on 2021 sales data or \$0.14 per unit based on Q3, 2013-Q4, 2020 sales data. Utilising wholesale sale prices, he recalculated both these figures as \$0.11 per unit.

38. Mr Bezant did not analyse Lenovo’s July 2018 Offer in his first report because it had not been pleaded.
39. In response to Mr Meyer, Mr Bezant identified a number of differences in their respective analyses, including (a) whether the 4 year-term ran from July 2018 or from 1 January 2021; (b) whether royalties would be paid at the stated rate on past sales or not (Mr Bezant assumed there was no past release because none was explicitly stated in the offer); (c) the period of the past release period, if applicable; (d) whether cellular PCs and tablets should be included or not; (e) the difference between using retail or wholesale ASP data; (f) whether it was appropriate to use the same by-standard split for 2022 and 2023 (derived from the actual in 2021); and (g) whether it was appropriate to assume that Lenovo’s ASPs would remain constant in 2022 and 2023 or were likely to decline. The application of Mr Bezant’s views on those points resulted in the following comparison table.

Table 7-2: Mr Meyer’s original and corrected rates per Lenovo’s July 2018 Offer, \$/unit

Period	Mr Meyer’s rates (original)	Mr Meyer’s rates (corrected)
Q3 2013 to 2020 past release		
Future	\$0.18	\$0.09
Past	\$0.14	\$0.00
Combined	\$0.15	\$0.03
No past release		
Future	n.a.	\$0.09
Past	n.a.	n.a.
Combined	n.a.	\$0.09

Source: Exhibit PKM-3.1 and Appendix 23: FTI analysis of Mr Meyer’s model, ‘Tables’ tab.

40. The debate continued in Mr Bezant’s third report.
41. I do not find it necessary or helpful to resolve any of these disputes over the analysis of the 5G Extended and July 2018 Offers. I consider there is enough information to be able to make a comparison with the rates I decide are FRAND, in so far as any comparison is necessary. However, these disputes give a flavour of the considerable extent of the disagreement between the forensic experts as to the correct approach to unpacking, selecting comparable agreements and, ultimately deriving a rate or rates for Lenovo in the FRAND range.
42. For differing reasons, each side says the other’s approach and offer is flawed. In order to decide whether either of the two is in the FRAND range or what is FRAND in this case, in very general terms I take the same approach as that of Birss J. in *Unwired Planet International Ltd v Huawei Technologies (UK) Ltd & Anr* [2017] EWHC 711 (Pat) (the public version) (‘UPHC’). However, the issues I have to decide are different in a number of respects. It will be recalled that UP had acquired its portfolio as a spin-off of part of the larger Ericsson portfolio. In his comparables analysis, Birss J had a couple of UP licences, which he rejected as comparables, plus a series of Ericsson licences, some of

which he regarded as useful and one in particular he selected as the best place to start. The rate(s) he derived from the Ericsson comparables then had to be scaled to fit the UP portfolio. Birss J. also conducted a top-down analysis and found it, on the evidence before him, to be a useful cross-check which served to confirm the rates he derived from his comparables analysis.

43. In this case, InterDigital have conducted their licensing program for a number of years, amassing a total of about 72 licences. A considerable number of those were ruled out by the parties on account of their age. InterDigital selected initially a group of 15 of their Patent Licence Agreements (**PLAs**) for their comparables case, later increased to 20 – which I shall call the **InterDigital 20**. For their part, Lenovo’s chosen comparables were those with the six largest undertakings in the mobile phone field. Mr Meyer’s analysis in his first and second reports was limited to the latest PLAs with these undertakings. By the time of his third report, Mr Meyer had added Huawei 2016 to his analysis, culminating in 7 PLAs. I shall refer to these as **the Lenovo 7**. At times, when discussing how certain issues developed, it is appropriate to recognise that Mr Meyer’s original analysis was limited to 6 PLAs, and, where necessary, I shall refer to the original 6 as **the Lenovo 6**.
44. There was no overlap between the parties’ chosen comparables. So, in this case a considerable number of possible comparable licences were put before the Court.
45. As I indicated above, InterDigital also proposed a top-down case as a cross check for their primary comparables approach. As is well known, top-down approaches have been applied in various cases including *UPHC*, *TCL v Ericsson*, *In Re Innovatio IP Ventures* and *Huawei v Conversant* (see further at paragraphs 165-166 below). The experts in this case accepted that in principle, top-down analyses can be informative. However, the general category of ‘top-down’ embraces a wide range of possible approaches and this case is a prime example of the fact that the devil is in the detail.
46. The general approach is very simple. The relevant formula is:

$$ARB_{TOTAL} = ARB_{InterDigital} / Share_{InterDigital}$$

Where: (i) ARB is Aggregate Royalty Burden,

(ii) ARB_{TOTAL} is the implied royalty for the total stack of 4G SEPs, by way of example,

(iii) $ARB_{InterDigital}$ is the aggregate royalty for InterDigital’s 4G SEPs, and

(iv) $Share_{InterDigital}$ is InterDigital’s share of 4G SEPs.

47. InterDigital seeks to establish its share of 3G, 4G and 5G SEPs by reference to various patent counting studies, principally from PA Consulting. InterDigital seeks to establish the level of a reasonable total royalty stack in two ways: first,

through ‘hedonic regression’ analyses and second, through public statements made by various third parties.

THE TRIAL

48. The trial took place over 17 days with an allocated 4 days of pre-reading, 2 of which were interspersed between hearing days. For the complexity of some of the expert evidence and the volume of material, even 4 days of pre-reading was woefully inadequate within which to master the materials and the myriad issues. I was supplied with over 50 bundles of material, with further bundles (mostly slim) of cross-examination materials. The largely introductory material in the Opening Skeleton Arguments (but with considerable detail in various Annexes) comprised over 360 pages, with the Closing Skeleton Arguments accounting for a further 400 pages.
49. Oral openings accounted for the first two days of trial. Certain of InterDigital’s fact witnesses were cross-examined on days 3 and 4. Mr Brismark’s evidence accounted for day 5, Mr Bezant for days 6 and 7, Mr Djavaherian for day 8 and Mr Meyer for days 9 and 10. The French law experts gave evidence on day 11. Days 12 and 13 were devoted to evidence on the Top-Down case, with Dr Peters and Dr Putnam on day 12, and Dr Kakaes and Dr Wang on day 13. Understandably, there was then a break to allow the parties to complete the preparation of their Written Closings. Oral closing argument occupied days 14, 15, 16 and about half of day 17.
50. The forensic accountancy evidence (from Messrs Bezant and Meyer) was unnecessarily complicated for several reasons including (a) the fact that each expert used different data in their unpacking analyses and (b) they worked to differing definitions of what constituted past sales. As in *UPHC* at [227], I was presented with ‘a blizzard of figures’. Even checking an individual value often took considerable time. It was usually necessary to locate an equivalent figure in the initial analysis, trace the response to it, check or locate the revised value, and check the detailed calculations in one or more of the exhibits, which were sometimes large Excel spreadsheets. By the end of the trial, I was left with the strong impression that cases of this type require extensive and much closer case management than occurred in this case, not least in an attempt to ensure that at least there is agreement as to the data which is used for the purposes of analysis. This impression was strengthened during my preparation of this judgment. I have to discuss other case management issues below regarding the development of the Top-Down case and, in particular, the Hedonic Regression analysis.
51. This trial was originally listed for 15 days and, when case managing other FRAND disputes, I have noticed that nearly all FRAND trials have been estimated at 15 days. This occurs at an early case management stage, when the action as a whole is being divided into technical trials and a FRAND trial and long before anyone has a clear idea of the scale of the issues which actually have to be determined at the FRAND trial itself.
52. In this case, the parties evidently decided they were going to (try to) fit everything into the original estimate. In order to do this, the parties wisely decided not to cross-examine where there were no disputes of real significance

for example, on the expert evidence of US and Chinese Law. It also meant that cross-examination of important witnesses had to be restricted. After the trial had concluded, I was left with the impression that some important points in the evidence had not been the subject of proper challenge or, in some cases, any exploration at all in cross-examination or adequate focus in submissions, and this impression only increased as I prepared this judgment. Certain important issues were mentioned, if at all, only in passing but several were not adverted to at all.

53. Looking back at the trial, what happened in cross-examination was each side attempted to damage the case presented by the other side and promote their own case, as one expects to take place. InterDigital also attempted to suggest a measure of equivalence between the analyses of Messrs Bezant and Meyer, and I have to consider this below. I observe that this sort of FRAND case is not well suited to adversarial litigation because there is (and was in this case) very little, if any, exploration of the middle ground between the positions taken by the two sides. Whilst it is possible that the Court will adopt one side's analysis wholesale, in practice this is unlikely. The consequence is that the Court is likely to be much more interested in the middle ground between the two side's positions.
54. This is another reason why, in my view, much closer case management is required over future FRAND cases and trials. The pre-trial review (PTR) must be a proper review of the case and the issues which the parties wish the Court to decide at the trial. This may require the Judge to engage in several days pre-reading prior to the PTR to ensure he or she is on top of the issues. There was no opportunity to do that in this case. There was a brief PTR (lasting about ½ day) but this did not provide an opportunity to get properly on top of the issues, not least because important expert reports were served after the PTR and all the issues had yet to crystallise.

THE EVIDENCE OF FACT

55. The evidence, in the form of witness statements, expert's reports and exhibits was extremely voluminous. It is neither practical nor necessary to discuss all the evidence in this judgment. In these sections, I provide a brief summary of the evidence and my views on the witnesses, in so far as they are material.
56. InterDigital served some 23 witness statements from 10 witnesses. Here I summarise the various deponents and an outline of the topics dealt with.
57. **Richard Brezski** is the Chief Financial Officer of the Third Claimant, the ultimate parent company of the InterDigital Group. In his witness statement, he explains InterDigital's approach to revenue recognition including how they account for past sales and any non-monetary consideration. His statement went in unchallenged.
58. **Bradley Ditty** is the General Patent Counsel of the Fourth Claimant. He oversees InterDigital's patent activities. He provides an overview of the InterDigital patent portfolio, including its size over the years, makeup and geographical scope. Again, his evidence was not challenged.

59. **Anthony Grewe** retired from InterDigital in April 2021 but was Vice President of the Licensing Group of the Fourth Claimant from 2015 until his retirement. He joined InterDigital in January 2011 being progressively promoted in the Licensing Group. In his first witness statement, he explains InterDigital's approach to licensing negotiations but also summarises his recollection of certain of the PLAs in which he had some involvement with Huawei, ZTE, Apple, Samsung, Asustek, Pegatron, Wistron, NEC, RIM and Acer.
60. In his second witness statement, Mr Grewe addressed questions which had been raised by Lenovo concerning the various discounts in InterDigital's licensing arrangements.
61. In his third witness statement, Mr Grewe was asked to consider questions arising from paragraph 6.6 of the first expert report of Mr Djavaherian (also referred to by Mr Meyer in his first report at [59]), and from Meyer 1 at [102].
62. **William J. Merritt** was the President and Chief Executive Officer of the Third Claimant between May 2005 and April 2021, having commenced his employment with InterDigital in January 1996 as Vice President, Legal. He became General Counsel in 1998 and General Patent Counsel in 2001. In his first witness statement he gives an overview of InterDigital's business, InterDigital's general approach to licensing and the licensing program, including a section on unsuccessful negotiations, InterDigital's negotiations with Lenovo and then his recollections of his involvements with the following InterDigital PLAs with Huawei, ZTE, LG, Apple, Samsung and Innovius.
63. In his second witness statement, he addressed volume discounts and regional sales mixes. In his third witness statement he addresses the November 2018 Offer made by InterDigital to Lenovo.
64. **Julia Mattis** is Vice President, Deputy General Licensing Counsel at the Third Claimant, a position she has held since January 2020. Originally qualifying as a lawyer in 2004, she commenced employment with InterDigital in February 2010 and has had a number of promotions in the patent licensing team. In her current role, she leads the legal team which is responsible for supporting the licensing business. Her team is responsible for all the legal negotiations for InterDigital's licensing deals and converting the commercial deal into an executable licence. She has given a total of four witness statements.
65. In her first, she starts by explaining her role and background. Then she explains InterDigital's January 2020 License offer to Lenovo. She summarises her recollections of a number of the PLAs which are in issue in this action, namely Huawei, ZTE, Apple, Fairphone, Innovius, Fujitsu, Panasonic, Wistron, Sharp, NEC, RIM, Quanta and Acer.
66. In her second witness statement, Ms Mattis covered her recollection of a recent PLA, designated the '2021 Sharp PLA' and similarly, in her third, she covered a further recent PLA, designated the 2021 Xiaomi PLA.
67. For her fourth witness statement, Ms Mattis was asked to and did explain the relationship between InterDigital and the Signal Trust.

68. **Sireesha Ancha** is a Managing Consultant at PA Consulting Group. She has been employed by PA since April 2006. She provides evidence about PA Consulting, and specifically about the Patent Essentiality Reports which have been prepared by engineers at PA, how the reports are compiled and something of the status of those reports in the market. In her first witness statement, although she describes all the PA Reports relating to various standards, she explains the methodology employed for the 3G, LTE and LTE-A Reports. In her second witness statement she addresses the 5G Report.
69. **Shival Virmani** is the Head of Mobile Patent Licensing and a Vice President at the Third Claimant. In his first witness statement, he explains his recollection of the patent licensing negotiations between InterDigital and Lenovo in his role as the primary contact at InterDigital between April 2010 and June 2011 and after he re-joined InterDigital in January 2019. In his second witness statement, he provides his recollections of the negotiations which led to PLAs with Blu and Doro, and in his third, with Xiaomi.
70. **John Garland** runs his own business providing licensing negotiation support to clients including InterDigital. He summarises his recollection of his involvement in the negotiations which led to the PLAs between InterDigital and Blu and Doro. He was not required for cross-examination.
71. **Michael B. Levin** is a US lawyer. He gives evidence of the status of the proceedings between the parties in the United States District Court for the District of Delaware (claims for patent infringement and declaratory relief by InterDigital and breach of contract (InterDigital's ETSI FRAND commitments) and violations of the Sherman Act by Lenovo) and in the Patent Trial and Appeal Board (PTAB) (Lenovo's challenges to the 8 InterDigital patents asserted in the infringement claim).
72. **Dr Fang Qi** is a Chinese lawyer. In his first witness statement Dr Qi gives an overview of the proceedings in China between the parties:
- i) There are proceedings brought by Lenovo in the Beijing Intellectual Property Court in which Lenovo requests that the Court determine FRAND licensing conditions for all Chinese 3G, 4G and 5G SEPs owned by InterDigital.
 - ii) There are also a series of invalidity petitions filed by Lenovo at the China National Intellectual Property Administration (CNIPA) in which Lenovo challenges the validity of 17 of InterDigital's Chinese Patents. He relates that hearings have been held in all 17 cases, of which 9 were held invalid (and InterDigital has appealed), 5 were held valid (in respect of 2 of those cases, both sides have appealed, and for a further case, Lenovo has appealed) and 3 were partly invalid (Lenovo has appealed in 2 of those cases).
73. In his second witness statement, Dr Qi provided an update:
- i) In the Beijing Intellectual Property Court proceedings, InterDigital's jurisdiction challenge was dismissed in a judgment dated 8th November

2021. Even allowing for an appeal, Dr Qi considers it likely that a first instance judgment will be handed down towards the end of 2023.

- ii) At the CNIPA, Lenovo has filed one further appeal in respect of an InterDigital patent held to be valid. Dr Qi does not indicate when all the appeals are likely to be determined or whether the FRAND proceedings are dependent on the outcome of the invalidity petitions.

74. Lenovo called no fact witnesses. In their case on conduct, InterDigital made much of Lenovo's failure to call the key personnel on Lenovo's side who were involved in the negotiations with InterDigital, with particular stress being placed on the absence of evidence from Mr Ira Blumberg. I will consider this later.

OBSERVATIONS ON THE WITNESSES OF FACT

75. Mr Grewe was called as InterDigital's first witness. He was a satisfactory witness but tended to be guarded in his answers, although not as guarded as Mr Virmani (see below).

76. As befits his long experience, Mr Merritt was a careful but engaging witness who was very ready to talk about the licensing negotiating process in this field. Having been in charge of InterDigital's business for such a long period, it was to be expected that he was ready to defend all of InterDigital's actions in the long negotiating history with Lenovo. Naturally, he was challenged on his characterisation of Lenovo as the worst or among the worst licensee he had dealt with, but he maintained that view. However, it was apparent to me at various points when he was being cross-examined on some of the documents from the negotiations that he was applying hindsight. In other words, in full knowledge of the importance to InterDigital's case of portraying Lenovo as 'an unwilling licensee', Mr Merritt was re-interpreting events from that standpoint.

77. Ms Mattis was only cross-examined for a relatively short time, but she gave clear and open answers. She was a good witness, albeit her evidence is not that material to anything I have to decide. Part of her cross-examination was conducted in private because it related to the Xiaomi 2021 PLA.

78. The final factual witness was Mr Virmani. In his cross-examination it was quickly apparent that Mr Virmani was not going to add anything to what can be seen from the face of the documents. Whenever he was asked about an email he had written or received, his answer was along the lines of 'that is what the document says'. He came across as a very literal and defensive witness with no independent recollection of any of the negotiating history. To the limited extent that he did add anything to the documents, I find he was essentially programmed to characterise Lenovo as unreasonable. I discuss one particularly egregious example in the Conduct section of this Judgment. He gave views which did not appear to me to be consistent with the contemporaneous documents and so likely to be driven by hindsight.

79. Looking more generally at InterDigital's factual evidence, the purpose of it was clear. It was to characterise Lenovo as the unwilling licensee and InterDigital as the patient (sometimes overly patient) licensor trying everything in its power

to achieve a deal. As I indicate elsewhere in this judgment, I do not find it possible to reach any concluded view as to the reasonableness of the conduct of the two sides without taking into account where the Court ends up on valuation.

THE EXPERT EVIDENCE

80. I received a total of 17 expert reports served on behalf of InterDigital and 13 served on behalf of Lenovo. I introduce here each of the areas on which expert evidence was given, the respective experts and some brief views.

ACCOUNTANCY

81. **Mark Bezzant** was the expert instructed on behalf of InterDigital in relation to accounting matters. He served four reports with substantial Appendices, a number of which were very large Excel files which could only be supplied in electronic form.
82. **Paul Meyer** provided equivalent evidence on behalf of Lenovo, serving three reports, also with substantial and detailed Appendices.
83. The evidence of Messrs Bezzant and Meyer is central to the comparables part of the case which I discuss in much greater detail below and my decisions in that part of the case reflect the degree to which I felt able to accept their evidence.
84. Mr Bezzant has a great deal of experience giving expert forensic accountancy evidence in litigation and in IP cases. He gave such evidence before Birss J in *UPHC*. He was a careful and considered witness and I am satisfied he was trying to assist the Court to reach a fair outcome, bearing in mind some of the fundamental assumptions on which his analysis had proceeded. He was expertly cross-examined by Mr Segan KC.
85. Naturally I have to discuss a number of aspects of Mr Bezzant's evidence in the comparables analysis. However, in general, I found his evidence less useful than that of Mr Meyer precisely because of the fundamental assumptions on which he (Mr Bezzant) proceeded. On reflection, I found some of those assumptions to be unrealistic, which perhaps indicates he had identified too much with InterDigital's case.
86. As will appear below, I had more confidence in some parts (but not all) of Mr Meyer's approach. Both experts (and their teams) did an immense amount of work, often under pressure, and I am very grateful for all the work which was done.
87. Furthermore, as I discuss below, after the trial had concluded I made requests for further analysis and assistance from these experts. Messrs Meyer and Bezzant co-operated to produce the requested materials within a short space of time and made brief observations on them in line with my requests. I am very grateful to them for carrying out these additional tasks.

PATENT COUNTING AND PATENT COUNTING STUDIES

88. **Ruud Peters** was instructed on behalf of InterDigital to provide his expert opinion in relation to the issues concerning the patent counting studies pleaded by InterDigital as part of their top-down cross check.
89. **Apostolos ‘Paul’ Kakaes** provided expert evidence on these topics on behalf of Lenovo.

SEP LICENSING

90. **Gustav Brismark** was asked to address the Court on behalf of InterDigital in relation to industry practices regarding licence terms and negotiations for SEP licences. Subsequently, he was asked to comment on the parties’ respective positions on the licence terms and their negotiations.
91. Mr Brismark was cross-examined over a full day. At first, he gave the impression of being careful and considered in his answers. He was obviously extremely knowledgeable based on his long experience in running Ericsson’s substantial licensing operation for many years. However, as his cross-examination progressed, I formed the distinct view that his opinions came from the viewpoint of the licensor, and from the particular Ericsson viewpoint as licensor. In that regard, his evidence indicated to me that Ericsson was an unusual SEP licensor in that (a) it published its rates long before others started to do so and (b) it had a portfolio which was generally considered to be one of the strongest in the SEP field.
92. There were two particular areas of Mr Brismark’s evidence which gave me some concern.
93. First, in his written reports he was asked to review the course of negotiations between InterDigital and Lenovo and he presented what, on the face of it, was a review from an independent expert. He confirmed in cross-examination that he had not taken account of valuation when conducting his review i.e. he did not consider the valuation of any of the offers made by InterDigital or Lenovo. This was not quite accurate. Although he had in the main refrained from commenting on any of the offers, he did describe one of Lenovo’s offers as ‘low-ball’. This was revealing. It meant, in my view, that he had implicitly adopted the position of InterDigital as licensor and had analysed the negotiations on the implicit assumption that InterDigital had made reasonable offers and it was Lenovo holding out.
94. This was confirmed in further cross-examination as to some of the details of the negotiating history. This revealed that Mr Brismark had not taken an even-handed view. In his review, he was ready to criticise Lenovo for periods of delay, but he did not mention equivalent or even longer periods of delay which were attributable to InterDigital. Mr Brismark nonetheless maintained his view that the negotiating history revealed deliberate delaying tactics on the part of Lenovo. To the extent that such issues need to be resolved, they are issues for the Court and not for the experts.

95. Overall, I was puzzled as to how anyone could reach conclusions effectively as to whether Lenovo was an unwilling licensee without considering the all-important valuation of the offers which were under discussion. In other words, how can a final conclusion be reached until it is possible to review the negotiating history against what is found to be FRAND. To give a hypothetical example, if what is found to be FRAND happens to coincide with even what the licensor considers to be a low-ball offer and the licensor has maintained much higher offers for years, then any periods of delay or failure to reach agreement take on a very different hue than if the FRAND rate is in line with the much higher offers.
96. When reviewing the negotiating history, I find that Mr Brismark lost sight of his duty to present an independent and objective view.
97. Second, in his first report and during cross-examination, Mr Brismark maintained that he had never experienced hold-up from a licensor. This was a striking statement, perhaps in part explained by his unusual experience at Ericsson but perhaps more so by his definition of ‘hold-up’. He said:
- ‘47. ... ‘hold-up’ refers to behavior of the licensor and is a theory which assumes that SEPs confer market power which enables a patentee to hold up the licensee by denying them access to a market unless they pay license rates which are above what a FRAND rate should be.’ (my emphasis)
98. He explained further in his second report, in the following passage where he summarised what he considered to be Mr Djavaheerian’s position and then responded:
- ‘52 Mr. Djavaheerian's overall position appears to be that smaller licensees are more likely to agree to terms that are supra-FRAND, and that SEP owners are regularly structuring SEP license agreements in order to have rates "appear higher". I disagree to both of these positions.
- 53 I consider that these claims are unsupported and are at odds with my experience from licensing over the past 15 years. It is my experience that licensors have no ability to force (and 'hold-up') a licensee into signing an SEP license agreement on terms they do not agree to, as licensees can rely on FRAND commitments made by the SEP owner when negotiating the license agreement terms and in the meantime continue to sell products and generate revenues, while using the patented SEP technologies. As I describe in my First Report (see paragraph 47), I am not aware of any evidence that 'hold-up' exists or has caused harm in the mobile telecommunications market.’
99. When I raised this definition with him, Mr Brismark confirmed my view that ‘denying access to a market’ was done by actually obtaining (and I infer, enforcing) an injunction or exclusion order against the products of the licensee. At this point, he then started talking (for the first time) about something

different, what he called ‘**hold-up power**’ i.e. the mere threat of litigation by a licensor to force a licensee to pay above a FRAND rate. He said ‘*I have not experienced that there is such a thing as hold-up power*’. It may be that his experience at Ericsson was unique in that regard, but I strongly suspect that many licensees have experienced some degree of hold-up pressure from licensors. In terms of how this licensing market works, I consider it is unrealistic to say there is no hold-up power. Once again, this was Mr Brismark taking a very licensor-centric view.

100. **David Djavaheerian** was instructed on behalf of Lenovo to give equivalent evidence. Subject to what I say below, I found him to be a good witness.
101. InterDigital criticised Mr Djavaheerian’s evidence because, although he discussed hold-up, he made no mention of hold out at all. They were also critical of his attempts to minimise the effects of hold out, in particular his points that (a) any detrimental effects of delay can be addressed by the SEP holder suing the implementer at an earlier stage; and (b) the SEP holder can always borrow against his portfolio to fund litigation. The ‘fire-sale’ recounted in *UPHC* shows his evidence to be unrealistic.
102. However, having heard both Mr Brismark and Mr Djavaheerian in the witness box and having considered their evidence generally, I have come to the clear conclusion that Mr Brismark was essentially expounding every point which could be made in favour of the SEP licensor with Mr Djavaheerian providing the opposite viewpoint. In particular, Mr Brismark’s views were heavily influenced by what I consider to be his unusual and long experience at Ericsson. Notwithstanding those observations, I found the evidence from both experts very interesting and useful. These experts covered some fundamental issues in SEP Licensing, and some such issues were not touched on in cross-examination. Although I have not accepted every point made by Mr Djavaheerian, nor rejected every point made by Mr Brismark, in general I found Mr Djavaheerian’s evidence to be more balanced and realistic.

HEDONIC REGRESSION

103. **Dr Jonathan Putnam** on behalf of InterDigital explained hedonic regression analysis and presented the results of his analysis in relation to the additional benefit of 3G, 4G and 5G functionality. His first expert report was served on 6th October 2021. He served a second (relatively lengthy) report on 29th December 2021. Dr Putnam is clearly an enthusiastic proponent of hedonic regression in general and of the particular analysis he presented in this case.
104. **Dr Elizabeth Wang** on behalf of Lenovo reviewed Dr Putnam’s first report and responded to it in her first report which was served on 25 November 2021. She did not serve a second report. During her cross-examination, it became apparent that a second report from Dr Wang ought to have been prepared and served. Following Dr Putnam’s second report, Dr Wang had undertaken some further analyses, identified certain papers by way of response to papers he had cited and had a number of positive points in answer. Although she had discussed her responses to Putnam II with Lenovo’s lawyers, none of these additional points or materials were put to Dr Putnam in his cross-examination. Some of this

material emerged in Dr Wang's answers in cross-examination, which took InterDigital's Counsel on this part of the case, Mr Chacksfield KC, and myself by surprise. As I made clear at the time, this was completely unacceptable and should not have been allowed to occur. I do not place the blame for this on Dr Wang, who was a careful witness. Rather, Lenovo's lawyers ought not to have allowed this situation to develop. I discuss the consequences below in the context of the issues on Hedonic Regression.

FRENCH LAW

105. **Dr Geneviève Helleringer** provided evidence on French law on behalf of InterDigital and specifically relevant aspects of the French Civil Code relating to contracts and the concepts of *stipulation pour autrui* (SPA) and *stipulation de contrat pour autrui* (SCPA). Her report was properly restricted to providing evidence of French law.
106. **Professor Phillippe Stoffel-Munck** provided equivalent evidence on behalf of Lenovo, although, as he pointed out, Dr Helleringer's approach was to explain just the principles of law whereas he delved further into how the issues arising under the ETSI regime would be decided under French Law. InterDigital therefore submitted that substantial parts of his evidence, where he opined on what a French Court would do on the issues before me, were inadmissible.
107. It is not profitable to debate precisely where the dividing line lay on admissibility. However, I have little doubt that the reason why the Professor was invited to express views on the application of the French law principles to the facts was so that his evidence could be deployed, as it was, before HHJ Hacon at the form of order (FOO) hearing in Trial A, to provide a foundation for Lenovo's arguments (a) that the issue Lenovo wished to raise in this case had not been dealt with in Optis F and (b) the issue could not be resolved without cross-examination.
108. As matters turned out, the force of the evidence which persuaded HHJ Hacon to decline to grant an injunction at the Trial A FOO hearing rather evaporated in cross-examination, during which the Professor accepted it was a question of fact for this Court to determine.

CHINESE LAW

109. **Hong Ai** gave evidence on Chinese law on behalf of InterDigital.
110. **Professor Xiangjun Kong** provided equivalent evidence on behalf of Lenovo

US LAW

111. **Richard S. Taffet** provided evidence on US law on behalf of InterDigital and addressed the questions of how US courts approach setting FRAND terms and whether this is settled and various topics referred to in the Statements of Case on US law.

112. **Professor Jorge L. Contreras** provided evidence on US law on behalf of Lenovo.
113. There was no cross-examination on either Chinese or US law and I was left to read the various reports for myself. This was very interesting, but only revealed a few points which I comment on below.

FACTUAL BACKGROUND

114. What I set out in this section is drawn generally from the evidence and represents my findings.

INTERDIGITAL

115. InterDigital was founded in 1972. The following is taken from various of its regulatory filings:
- i) Its various subsidiaries engage in technology research and development activities or in the prosecution, maintenance, enforcement and licensing of patents.
 - ii) Its patents relate to wireless communication technologies and video technologies and as of the 31st of December 2020 its regulatory filing suggests the group held a portfolio of approximately 28,000 patents and patent applications related to wireless to communications, video coding display technology and other areas relevant to the wireless communications and consumer electronics industries. Its patent portfolio is said to comprise patents that are essential or may become essential to cellular wireless standards including 3G, 4G and 5G technologies and other wireless standards including the IEEE 802.11 suite of standards ('Wi-Fi') and video codec standards (H.265/HEVC).
 - iii) InterDigital says it monetises such technologies through licensing and other revenue opportunities with the vast majority of its reported revenues earned from licensing products that allegedly incorporate InterDigital's wireless technology patents including mobile devices such as cellular phones, tablets, notebook computers and wireless personal digital assistants; wireless infrastructure equipment; modems and components; dongles and modules for wireless devices and Internet of Things devices.
116. It is clear from data presented by Mr Meyer that InterDigital has an uneven geographical distribution of patent rights. For example, on Mr Meyer's analysis InterDigital had the highest number of distinct patent families in the United States, with a total of 543 patent families, with Taiwan in second place with 357 distinct patent families, followed by Japan with 354 and China with 334. Germany, the UK, France and the Netherlands sit around the 250-260 mark. Argentina and Mexico are around the 150 mark, with Canada, Israel and Australia in the 110's. After that, there is a long tail of countries with fewer than 100 distinct patent families: 3 in the 90's, 8 in the 60's by way of example, before the final 11 countries who have less than 10 distinct patent families, of

which the last 5 have only 1 distinct patent family. Mr Meyer presented a heat map of InterDigital's global patent coverage and, as he observed, the InterDigital Declared Cellular SEP Portfolio is most heavily concentrated in the US, China, Europe, Taiwan, Japan and South Korea. By contrast, InterDigital has relatively few patents in South and Central America, India, South East Asia, the Middle East and Africa.

THE DEVELOPMENT OF INTERDIGITAL'S LICENSING 'PROGRAM'

117. Mr Merritt described the mobile phone industry as nascent, at the time when he joined InterDigital in 1996, with only a very small number of companies engaged in technology development and licensing. He related that InterDigital were approached by a consultant representing a group of some 20-25 handset manufacturers who had come together to gain a better understanding of the licensing environment for GSM/2G, under the umbrella of the International Telecommunications Standards User Group (ITSUG).
118. Over 1997, Mr Merritt said he was involved in broad discussions with that group over licence structures and rates for running royalty ('RR') agreements. He recalls that they successfully negotiated a template form licence agreement which formed the basis for some of their early 2G licences, and these licences also formed the basis for InterDigital's 2G rates in the 1-2% range, subject to various discounts. Other concepts which Mr Merritt said resulted from these discussions were volume discounts, pre-payments structures and floors and caps, even though Mr Merritt said the work with ITSUG focussed mainly on 2G RR licences. He said that 'simultaneously', they negotiated a number of 2G lump sum ('LS') licences for which, because they presented certain risks to the licensee, InterDigital was prepared to offer certain discounts, although he indicated that discounts for different term lengths were not prescribed until later.
119. These early developments are important, because Mr Merritt said those foundational concepts (developed in 2G licensing) remained part of the InterDigital 'program' from 1997 to 2019, even though he acknowledges that the rates and terms evolved over time.
120. InterDigital began to license 3G technology in the early 2000's. Mr Merritt said that many market participants negotiated 3G licences with InterDigital because (a) they were familiar with their practices from 2G; (b) InterDigital's long history of offering terms for essential patents that Mr Merritt contended were consistent with FRAND; (c) InterDigital's 'heavy' participation in and contribution to 3G Standards and (d) InterDigital's 3G portfolio. InterDigital adopted 3G rates which were based on but slightly higher than their 2G rates, but still in the 1-2% range, and subject to the same discounts.
121. Mr Merritt says that they went through a similar process in 2009 for formulating their 4G rates, using their 3G rates as a foundation but again increasing the rates 'as a starting point for negotiations for LTE products'. In both cases, Mr Merritt considered the premium was justified because all licences are usually multimode: so a 3G licence included 2G and a 4G licence is usually a 4G/3G licence.

122. Over the period from 1997-2019 (which I note is a long period of time in the fast-changing world of cellular technology), Mr Merritt referred to a number of ‘significant changes and challenges in the mobile industry and in the licensing environment’. I need to take account of these later, so I will summarise his points.
123. First, he said that unit volumes were continuing to grow significantly. He said this presented a unique dichotomy. He attributed the rise in part ‘to the incredible success of companies like InterDigital in developing the wireless technologies’. New applications and services were developed leveraging this technology. Mr Merritt continued:
- ‘Given this, one would expect that everyone would place a high value on the inventions driving this technology. It is therefore strange that at the same time as wireless technologies became ever more important they also started to be viewed as a commodity and there began to be push-back, and downward pressure from some in the industry, on the royalties that the developers of wireless technology were receiving.’
124. Second, Mr Merritt referred to ‘a general anti-patent sentiment’, especially in the United States. He said in the US, the ability to secure an injunction for patent infringement was significantly curtailed. He referred to the Samsung v Apple dispute in which the US International Trade Commission (**ITC**) was prevented by the President of the USA from enforcing an exclusion order against the import of iPhones. Mr Merritt said the result of this pushback was that patent licensors faced a potential situation where they would have to sue an unwilling licensee in every country on every patent and collect damages, a costly and time-consuming process which would have been economically unviable.
125. Third, Mr Merritt said the Chinese manufacturers began to enter the mobile device market, focussing first on domestic sales and then slowly moving into the international market. He said they had a lack of experience of IP and a very different view of pricing of IPRs. As his example, he said they were the first to insist on a different, lower royalty structure for China, with the Chinese government also pushing the same concept. He said the result was downward pressure on royalties and the emergence of arguments on regionalisation.
126. Notably, Mr Merritt said that, despite this challenging environment, InterDigital’s licensing programme continued to operate well. He described how various regulatory challenges (in e.g. Taiwan in 2017 and before the ITC, in 2013 and 2014) to their licensing practices failed routinely to find any substantive issues with their program. He attributed their continued success to their flexible approach to licensing and that their approach ‘had been informed and validated through extensive interaction with customers’.
127. Against that rather InterDigital-centric backdrop, in order to get into more specific matters, it is necessary to start with an understanding of what Mr Grewe meant when he referred in his witness statements to the ‘program’:

‘Where I refer below to the ‘program’ I am referring to the body of information comprising the company's position as to the rates, caps, floors and discounts that were used as the basis for its offers to third parties at any particular time to ensure that we kept within the parameters of InterDigital's licensing activities. There was not a single document that encapsulated the 'program'. Instead it was a body of information which was known and followed by those of us who were involved in licensing and would have been incorporated in opening offers. As I will explain below the program also developed over time to reflect the deals we were concluding.’

128. Next, it is clear from Mr Grewe’s evidence that the ‘program rates’ from time to time were InterDigital's undiscounted ‘program rates’ as presented in their opening offers to companies.

129. Thus, in 2011, he said that InterDigital’s opening offers to companies were those which were set out in in the opening offer to Wistron dated 10 May 2011, being 1% for 2G, with a \$0.75 floor, 2% for 3G and 4G only devices, with a \$1.50 floor, and 2.5% for 4G multimode devices with a \$2.50 floor. Then:

‘I recall that shortly after this, in 2012, we entered into the agreement with RIM / Blackberry and the rates, caps and floors set out in that agreement, together with the volume discount table referred to in our opening offer, became the new ‘benchmark’ for the program.’

130. RIM had previous PLAs with InterDigital in 2003 and 2007. RIM 2012 took just over a year to negotiate and agree. It covered 2G, 3G and 4G handsets, various other devices and infrastructure. It had an effective date of 1 January 2013 and a five-year term. It was a running royalty licence with the following rates:

- i) 3G (CDMA2000) 1% of the ASP of ‘Basic Communication Devices’, with a floor of \$0.50 and a cap of \$1.20;
- ii) 3G (excluding CDMA 2000) 1.25% of the ASP of ‘Premium Communication Devices’ with a floor of \$0.50 and a cap of \$2.00;
- iii) 4G-only: 1.25% of the ASP of ‘Premium Communication Devices’ with a floor of \$0.50 and a cap of \$2.00;
- iv) 4GMM: 2% of the ASP of ‘Premium Communication Devices’ with a floor of \$1.50 and a cap of \$2.75.

131. The parties agreed that for 2013, the prices for the Basic and Premium devices would be \$95.70 and \$312.30, with prices for future years based on data from internationally recognised organisations.

132. There was a prepayment credit of \$11.2m from the prior PLA and RIM agreed to make a mandatory pre-payment of \$105m, based on projections and agreed

discounts for the first two years of the term, but which included a release on past 4G only and 4GMM sales (up to a limit of 10,000 devices).

133. Mr Bezant calculated LER per unit rates of 3GMM at \$1.56 and 4GMM at \$2.11.

134. As Mr Grewe also said:

‘We also have a number of discounting structures which form part of InterDigital's licensing program which we look to when negotiating a license and assessing internally whether that license is aligned with our licensing program. I have set out some of them below. Our rate and discounting structure has changed over time in an effort to provide additional transparency. For example, historically we used primarily a volume discount approach where a discount was applied to all sales as a licensee hit various volume thresholds. The volume discount used in the 2011 - 2018 time-frame was derived using a company's three year aggregated projected volume against a discount table for the projected 3 year volumes of a company. That discount was then applied across the term of the agreement. Since then, the volume discount has been arrived at by looking at a company's volumes by individual years and the volume from the discount table is arrived at by looking at the various volume thresholds within a given year (much like a US income tax table) to provide incremental discounts levels as the annual volumes increase.’

135. A volume discount table was included in InterDigital's initial offer to RIM, but Mr Bezant assumed it only applied to LS licences and not to RR licences like RIM 2012. Although I am uncertain whether the document dates from InterDigital's initial offer to RIM, in InterDigital's disclosure, document F143 contains a table which is said to be the RIM volume discount table. The discounts are based on ‘Guaranteed Unit Volume’ over a 3-year period. If that volume was less than 5m units, the discount was 0%; volumes between 5 and 10 million attracted a discount of 3%. The size of the discount rose with increasing volumes, so for example, volumes between 25 to 100 m units attracted a 20% discount, 400-500m: 50%; 500-999m: 60% and >1 bn units: 75%.

136. Mr Grewe said they had to extrapolate the table for Samsung 2014 because Samsung's 3-year volume was predicted to be in the [RED] range. Samsung qualified for an 80% volume discount.

137. The RIM volume discount table was used from 2013 to about 2018. Mr Grewe said they moved at the end of 2019 to more of a ‘tax table’ type structure for volume discounts, as part of the move to InterDigital's new programme for licensing. A copy of the ‘tax table’ was set out in the January 2020 offer to Lenovo:

Table II: Annual Incremental Volume Discounts

From (M units)	To (M units)	Marginal Discount
0	20	0%
20	40	10%
40	60	20%
60	80	30%
80	100	40%
100	120	50%
120	140	60%
>140+		70%

138. Using the example in the January 2020 offer letter, for an annual sales volume of 45m units, the top 5m units would attract a 20% discount, the 20-40m tranche a discount of 10% and the first 20m units, 0% discount.
139. From 2020 onwards, InterDigital published its ‘rates per standard’ on its website. Mr Grewe said that meant that InterDigital did not have to wait for a NDA to be agreed and signed before making an opening offer.

Technology	Rate	ASP Floor	ASP Cap
3G	0.40%	US \$40.00	US \$100.00
4G	0.50%	US \$50.00	US \$200.00
5G	0.60%	US \$60.00	US \$200.00

140. The website makes certain additional points clear:
- i) These are the ‘program rates’ currently available for a SEP licence for handsets.
 - ii) The rates are ‘*for informational purposes only, does not constitute a binding offer, and is subject to additional terms and conditions and execution of a definitive [PLA]*’
 - iii) The pricing is for new licensees, covering sales from 1 January 2020.
 - iv) For ‘*qualifying new handset licensees, additional discounts may apply based on duration of the agreement, product volumes, payment timing and structure, special market considerations and other factors.*’
141. Before and after the 2020 rates were published, InterDigital applied a range of discounts in addition to the volume discounts. Mr Grewe discussed these in more detail in his second witness statement. Before doing so, he described how they might be applied. The following extracts give a flavour of his evidence on this point:

‘6. In preparing an offer to a prospective licensee InterDigital will, based on the information it has about a licensee and the

proposed structure of the license, assess whether the prospective licensee may be eligible for certain discounts. A licensee may be eligible for discounts in accordance with InterDigital's licensing program based on a variety of factors. ...

7. Prior to the publication of InterDigital's licensing program rates in 2020, the application of a discount in an opening offer, and whether that was explicitly stated, would depend on the level of discussions that had taken place before the opening offer was made, whether an NDA was in place, and how much we knew about the prospective licensee and the structure of licence they were looking for. Often, the opening offer (which would usually be running royalty but may set out both a running royalty and a lump sum or fixed fee offer - what is set out will depend on what conversations have already taken place) would set out the undiscounted rates and would state (either in the offer itself or the meeting discussing the offer) that discounts may be applied depending on certain factors (i.e. those outlined above). As aspects of the agreement were better understood during subsequent discussions, such as the length of term, type of payment structure and timing etc., the related discounts would be included in future offers, even if this was not explicitly stated in the opening offer...

8. I cannot think of an example of where a licensee might be eligible for a type of discount but was not offered it during the course of the discussions / negotiations, and cannot think of any reason why that would be the case. However, as is also explained in more detail below, any resulting discount calculated based on an initial assessment of eligibility is a starting point in the negotiations and may well be subject to change as the structure of the license becomes more clear (for example changes could be made to address information conveyed by the licensee and/or information that emerges from other sources), and as the top line number and payment structure of the license is negotiated between the parties.'

142. From these extracts and the one quoted in paragraph 134 above, I was left with the distinct impression that a licensee may well not be aware of the specific discounts which InterDigital included in various offers and that there was no guarantee that the discounts were uniformly applied. It was clear both from Mr Grewe's evidence and from Mr Merritt's evidence that InterDigital regard discounts as mechanisms which they can adjust in order to reach an agreed PLA.
143. The various discounts discussed by Mr Grewe in detail in his second witness statement are:
- i) Fixed-fee discount: a licensee would be eligible for a fixed fee (FF) discount if it entered into a lump sum or fixed fee licence.

- ii) Time value of money discount: typically around 10% per annum but higher at certain points, and in part based on InterDigital's cost of capital. Mr Grewe described the FF discount as accounting for the value InterDigital places on the certainty of the sum they receive, whereas the Time Value of Money discount accounts for the increased value InterDigital places on money received today rather than in the future.
 - iii) Term discount: a licensee would be eligible for a term discount if it agreed to a licence of 3 years or more in length, with the discount increasing from 3% at 3 years to a maximum of 10% at 10 years.
 - iv) Pre-payment discount: which only applied to RR licences where sums were paid in advance.
 - v) Volume discounts: as above, although Mr Grewe stated that for LS licences, the volume discount was incorporated into the lump sum using sales forecasts. He also said he didn't recall working on any RR agreements under the new programme prior to his departure from InterDigital on 2 April 2021. I note that Mr Bezant assumed that the volume discounts did not apply to RR licences, and there is no indication that anyone from InterDigital indicated he was mistaken.
 - vi) Regional Sales Mix Discount: a licensee is eligible if a proportion of their products are manufactured and sold in China primarily for use in China ('China-only products'), which are subject to a 50% discount. Mr Grewe also mentioned Panasonic 2013 as an example where different 3G and 4G rates were set as between Japan and the Rest of the World. It appears a similar arrangement was provided in Panasonic 2017. I assume these Panasonic arrangements were the result of Panasonic being a 'local king' in Japan, so I need not consider them further.
 - vii) Renewal Discount: this is a discretionary discount, both in terms of when it might be offered and, if offered, the amount. Mr Grewe said the discount was something in the range of 5-20% and was available to be offered if a licence was renewed early or about the time a previous licence was expiring. He indicated that any discount was determined on a discretionary basis, taking account of the cost of litigation and the other party's behaviour, such as their litigious and negotiating history.
144. Following receipt of Mr Grewe's first witness statement, Lenovo requested a list of the discounts actually applied (and how they were determined in each case) if they were not determined in the same way for each licensee. I assume the request concerned each of the pleaded PLAs. Mr Grewe began his response to this request as follows in his second witness statement:

'Given our usual negotiation process, it is very difficult to provide a list of the discounts 'actually applied' for each finalized license and how they were determined, other than as explained further below. I have explained above how offers are expressed with regard to discounts during negotiations. If Lenovo's request seeks identification of specific discounts 'actually applied' in the

sense of applied precisely to a separately negotiated price at the end of a negotiation, it misunderstands the nature of the negotiation that follows from an initial offer to the conclusion of the license agreement.’

145. The ensuing paragraphs make it clear that any discussions regarding discounts are *internal* to InterDigital, a point confirmed by Mr Grewe’s final sentence in this section: *‘In other words, even if there were to be any specific discussion of discounts in the negotiation it would likely only be to increase them.’*

146. In the course of his response, Mr Grewe made an interesting general point about the differing viewpoints of InterDigital and licensee:

‘28. As will be appreciated while InterDigital takes care to make sure the end result through the use of appropriate discounts is consistent with the program, many times the licensee is more focused on what the top line number looks like when extrapolated to a per unit basis so that they can compare the values against what they believe others may have paid for their licenses based on publically available information. As such, even though the publically available information does not necessarily provide all of the pertinent information, as part of the back and forth process, it is the top line number and the value of the license that queries from the licensee ultimately focused on, more so than individual discounts themselves.’

147. In particular, his observation about the focus of the licensee is consistent with the point made by Judge Selna in *TCL v Ericsson* (cited in paragraph 262 below) that *‘parties to these licence agreements generally care much more about the total amount they have to pay from the total value they receive’*.

148. It is not necessary for me to rehearse all the evidence given by fact witnesses as to their recollections of what discounts were applied in which of the pleaded PLAs. In some early case management of this part of the case, Birss J. very sensibly refused to order full disclosure of documents evidencing how each of the pleaded PLAs were negotiated, although he did order disclosure of each side’s last stated position on various key topics such as volume and value of past sales, consideration for past sales or the implied effective rate, discounts, set-offs and uplifts, material non-monetary consideration and any key contextual information. By way of example, however, I refer to Mr Grewe’s evidence as to what discounts were applied in reaching one of the more recent PLAs, [REDACTED] (emphasis added):

‘The starting point *would have been* that [REDACTED] was eligible for a term discount, regional sales mix discount, volume discount, fixed-fee discount and a time value of money discount. Any movement on those *would have been* because of the particular negotiation and its particular context, and eventually we reached a place where both parties could live with the top line numbers even though the parties had differing views on [REDACTED] future sales mix and numbers as I explained at

para 68 of my first witness statement. (This was in part due to each side having its own views built from the information available to that party.)’

149. So the only negotiating history in the case is that which involved Lenovo.

LENOVO

150. The Lenovo group of companies was established in 1984 with main headquarters in Hong Kong and China and operations centres in Beijing and, following the acquisition of IBM’s PC business in 2005, in Morrisville, North Carolina. Lenovo operates in 180 territories around the world. It has two core business groups: (1) an Intelligent Devices Group which includes PCs, tablets, smart devices, plus Lenovo’s mobile business and (2) the Infrastructure Solutions Group, which includes servers, storage, networking, software and services. Lenovo now includes Motorola Mobility, the legacy smartphone segment of Motorola, Inc, which Lenovo acquired from Google in 2014.

151. This action is concerned with Lenovo’s cellular products which implement one or more cellular standards – 3G, 4G and/or 5G – and these include mobile handsets, tablets and PCs.

152. Lenovo has manufacturing facilities in China, Brazil, India, Japan and Mexico and a fulfilment centre in the US where inventory is stored in preparation for the fulfilment of customer orders. Mr Meyer understands Lenovo's handsets to be primarily manufactured in China, Brazil and India, whereas its PC data centre and server businesses additionally utilised manufacturing facilities in Mexico and Japan. Accordingly, so Mr Meyer says, the fact that a substantial portion of Lenovo’s mobile phones are manufactured in Brazil and India, where InterDigital’s patent coverage is relatively low, and are then sold in low or no patent jurisdictions is relevant to the negotiation for a licence to the InterDigital Declared Cellular SEP portfolio as between InterDigital and Lenovo.

153. Mr Meyer also presented data indicating that between Q3 2013 to Q2 2021 Lenovo sold approximately 487 million cellular products, distributed between the generations of technology as follows: 2G: 1.1%; 3G: around 30%; 4G: just under 69%; 5G: 0.6%. In terms of geographical sales distribution over the same period, China accounted for the largest proportion of sales of Lenovo cellular products with 22.6% followed by the ‘Rest of the World’, 19.8%, Brazil, 16.7%, US, 12.9%, Europe, 9%, Mexico, 8%, what was termed the Rest of Latin America, 6.4%, Argentina, 3.5%, Canada, 0.5% and Japan, 0.4%. However, if I total all the LATAM countries, their share of Lenovo’s sales is 34.6%.

OVERVIEW OF LICENSING DISCUSSIONS

154. In terms of licensing discussions between the parties, these began in 2008 with an initial letter from InterDigital to Lenovo Mobile Communications. In the early years the parties engaged with the delivery by InterDigital of claim charts, an initial term sheet and meetings, before Lenovo broke off discussions in an email in June 2011. Correspondence restarted in February 2012, but no progress was made. Discussions resumed in May/June 2013 against the backdrop of an

announcement by Lenovo that it intended to bring its smartphones to the US market within a year. Lenovo's acquisition of Motorola Mobility in October 2014 was also a significant event. From March 2015-September 2016 the parties were engaged in discussions regarding opportunities for R&D collaboration. In December 2015, InterDigital renewed an offer previously made to Lenovo in October 2013. Lenovo made its own offer to InterDigital in May 2016. As already mentioned, over the years, InterDigital made a total of 14 offers to Lenovo and Lenovo made 2. However, a fairly constant refrain from Lenovo was requests for more transparency regarding the calculations behind InterDigital's offers and FRAND rate structure, and more information about other InterDigital licence agreements. It is apparent from the various offers made by InterDigital that it was trying various combinations of rates and terms to encourage a deal. Thus, there were a number of lump sum offers, running royalty and hybrid offers.

155. On 4 February 2019, InterDigital withdrew all previous offers but made an offer of a 5-year licence covering 3G, 4G and 5G (and Wi-Fi and HEVC) with the following rates: 3G: 1.5%; 4G: 2.0%; 5G: 2.0% (all being subject to various floors and caps) or, as I understand it, a proposal for a fixed fee of \$134m upfront and a binding arbitration for past sales (which were not released).
156. This action commenced on 27 August 2019 accompanied with a further offer for a 6-year term, 1 January 2018 to 31 December 2023 at rates of 3G: 0.75%; and 4G: 1.00% (again with caps and floors), with a release for past sales in return for royalties at the same rates for ongoing sales, due in a lump sum payment within 30 days.
157. The next day, InterDigital commenced patent infringement proceedings against Lenovo in Delaware.
158. On 15 January 2020, InterDigital made a further offer, clarified in a letter dated 18 June 2020, which later became the basis for the 5G Extended Offer. In April 2020, Lenovo commenced anti-trust proceedings against InterDigital in Delaware and proceedings against InterDigital in the Beijing Intellectual Property Court seeking the determination of FRAND conditions for InterDigital's Chinese portfolio of 3G, 4G and 5G SEPs. InterDigital made a further offer to Lenovo in May 2020 for a licence to 3G, 4G, 5G, Wi-Fi and HEVC technologies on the basis of the payment of a lump sum of \$90m with an option to explore R&D collaboration to which InterDigital offered to consider allocating up to \$9m and an option for up to 10% of the consideration to be provided by way of patent transfer.
159. In August 2021, InterDigital amended its January 2020 offer to include 5G. These amended terms are the **5G Extended Offer**.
160. Finally, I should mention that, via a witness statement served for the form of order hearing in Trial A in around November 2021, InterDigital learnt that Lenovo had issued a claim in the Wuhan Court seeking a global FRAND determination for a licence to InterDigital's 3G, 4G and 5G SEP portfolio starting in January 2024. At the time of the trial, InterDigital had yet to receive any formal notification of those proceedings let alone service of them.

InterDigital pointed out that Lenovo has not sought a licence for the post-2023 period, nor asked InterDigital to extend the term of the FRAND licence being determined by this Court but InterDigital also acknowledged that those proceedings have no bearing on the issues I have to decide.

LENOVO’S POSITION IN THE GLOBAL MARKET FOR MOBILE HANDSETS

161. The global market for mobile handsets is highly competitive and volatile. Lenovo’s position varies by year (a point I consider later), but a general picture is provided by looking at market share data of the Top 20 Handset suppliers for 2013-Q2, 2021. Mr Meyer presented the following in his first report, based on data from IDC. The entities licensed by InterDigital are shown highlighted in yellow:

Rank	Supplier	Market Share	Total Units (M)	Average Annual Units (M)
1	Samsung			
2	Apple			
3	Huawei			
4	Transsion			
5	Xiaomi			
6	OPPO			
7	vivo			
8	Microsoft			
9	Lenovo			
10	LG Electronics			
11	TCL			
12	HMD			
13	ZTE			
14	Micromax			
15	Lava			
16	Sony			
17	Coolpad			
18	Lyf			
19	Gionee			
20	realme			
Top 20 Total		78.8%	12,475	1,468
	<i>Other</i>	21.2%	3,365	396
Total Market		100%	15,840	1,864

162. The data in the table demonstrate that the Top 20 handset suppliers accounted for nearly 79% of all handsets globally. Each of them sold more than 10m units per annum on average. In relation to the six entities which account for the Lenovo 7, they accounted for approximately 47% of global handset sales over the period. It may also be noted that none of the InterDigital 20 feature in this table.

163. As regards handsets, Lenovo's sales volumes and market share peaked in 2014 with a market share of just above 5%, prior to that its market share was 3-4% and from 2016 onwards, it had dropped to between 2-3%, sitting at 2.11% in 2020. By 2020, Lenovo was ranked 10th in the handset market, 4th in the cellular tablet market and 1st in the cellular PC market. Although Lenovo has sold and sells tablets and cellular PCs, the volumes are dwarfed by the handset sales which account for 91% of the total units covered by Mr Meyer's analysis i.e. from 2013 to Q2, 2021.
164. Even making due allowance for changes from year to year, this table also demonstrates that Lenovo belongs in the top 10 global handset suppliers with volumes very close to, indeed slightly higher than, LG, and in amongst the six manufacturers who account for the Lenovo 7.

APPLICABLE PRINCIPLES

PREVIOUS CASE LAW

165. As to the first headline issue which I identified at the start, this is the second time the English Court has been called upon to determine what terms are FRAND. As to the second headline issue(s), aspects of the relevant principles have been addressed by Meade J. in the *Optis v Apple* litigation. Accordingly, my task has been significantly simplified by the relevant prior judgments in this area. Here I simply identify them and define my references to them:
- i) The masterful analysis undertaken by Birss J. (as he then was) in the first case of this kind – *Unwired Planet International Ltd v Huawei Technologies (UK) Ltd & Anr* [2017] EWHC 711 (Pat) (the public version) ('UPHC'), together with his later judgment on remedies [2017] EWHC 1304 (Pat) ('UPHC Remedies').
 - ii) The judgments on appeal from Birss J.: [2018] EWCA Civ 2344 ('UPCA') and [2020] UKSC 37 ('UPSC').
 - iii) Two judgments of Meade J. in *Optis Cellular Technology LLC & Ors v Apple Retail UK Ltd & Ors* in which he had to consider aspects of the ETSI IPR Policy. First, in Trial B [2021] EWHC 1739 (Pat) ('Optis B') and then in Trial F: [2021] EWHC 2564 (Pat) ('Optis F'). Whilst preparing this judgment, the Court of Appeal heard and dismissed Apple's appeal and Optis' cross-appeal regarding Optis F: [2022] EWCA Civ 1411 ('Optis F CA').
 - iv) The judgment of HHJ Hacon on the form of order hearing in Trial A in this litigation, in which he declined to grant any injunction: [2021] EWHC 3401 (Pat) ('Trial A FOO').
 - v) Although I have not found it necessary to discuss it, I have also had regard to the ruling of the CJEU in *Huawei Technologies Co Ltd v ZTE Corp* Case C-170/13, ECLI:EU:C:2015:477 [2015] 5 CMLR 14 ('Huawei v ZTE').

166. The development of the correct approach to setting global FRAND terms is an international endeavour, even if particular steps have to be taken in different territories where considerations of law and practice may differ. During the trial before me, there was rightly extensive reference to the case law in other jurisdictions, notably from the US and China. Here I identify the relevant cases and define my references to them:
- i) ***Huawei v InterDigital*** (2013) Guangdong High People's Ct. Civ. Third Instance No 305.
 - ii) ***TCL v Ericsson - TCL Comm. Tech. Holdings, Ltd. v Telefonaktiebolaget LM Ericsson Inc., Public Redacted Memorandum of Findings of Fact and Conclusions of Law 8:14-cv-00341 (C.D. Cal. Dec. 21, 2017) (Selna, J.)***.
 - iii) ***TCL v Ericsson (Federal Circuit) - TCL Commun. Tech. Holdings Ltd. v. Telefonaktiebolaget LM Ericsson Inc., 943 F.3d 1360 (Fed. Cir. 2019)***.
167. Reference was also made to other US decisions, in particular:
- i) ***In re Innovatio IP Ventures LLC Patent Litigation*** Case No 11 C 9308, 2013 WL 5593609 (N.D. Ill Oct 3, 2013)
 - ii) ***Ericsson v D-Link*** - Ericsson, Inc., v D-Link Systems, Inc., 773 F.3d 1201 (Fed Cir 2014).
 - iii) ***CSIRO v Cisco*** - Commonwealth Scientific and Industrial Research Organisation v. Cisco Systems, Inc., 809 F.3d 1295 (Fed. Cir. 2015).
168. I have noted certain differences in the US approach, but I did not detect that either side considered them material to my approach in this case:
- i) First, see the point made by Birss J in *UPHC* at [97], where he referred to two sources of value for the patentee, one from the invention and the second from its incorporation into the standard. As I understand the position, in the US the FRAND rate is determined 'ex ante' (i.e. before the patented invention is adopted into the standard) to eliminate hold up. However, Birss J. noted the agreed evidence from the expert economists before him was that FRAND was not a scheme which meant that the patentee could not appropriate some of the value that is associated with the inclusion of his technology into the standard. For my part, I do not see how one can eliminate or distinguish the value of an invention being incorporated into a standard from the invention itself.
 - ii) Second, there may be a difference in approach on the 'Non-Discriminatory' element of FRAND. From a US perspective, ND does not mean that all licensees must be offered the same terms, merely that similarly situated licensees must be offered substantially similar terms. These terms are somewhat elastic.

169. It may be noted that much of the caselaw (and the issues of interpretation of clause 6.1 of the ETSI IPR Policy) relates to the Conduct part of this case, and I attempt to summarise the position on that part of the case first. On the Comparables part of the case, I have drawn considerable assistance from the judgments of Birss J. in *UPHC* and of Judge Selna in *TCL v Ericsson*, in particular, and I address those principles second.

PRINCIPLES APPLICABLE TO CONDUCT

THE ETSI IPR POLICY

170. In cases of this type, both parties invoke the ETSI IPR Policy and in particular clause 6.1 of that Policy, albeit it is invariably the case (at least to date) that the SEP owner and the implementer seek to interpret that provision in different ways. Clause 6.1 provides as follows:

"When an ESSENTIAL IPR relating to a particular STANDARD or TECHNICAL SPECIFICATION is brought to the attention of ETSI, the Director-General of ETSI shall immediately request the owner to give within three months an irrevocable undertaking in writing that it is prepared to grant irrevocable licences on fair, reasonable and non- discriminatory ("FRAND") terms and conditions under such IPR to at least the following extent:

- MANUFACTURE, including the right to make or have made customized components and sub-systems to the licensee's own design for use in MANUFACTURE;
- sell, lease, or otherwise dispose of EQUIPMENT so MANUFACTURED;
- repair, use, or operate EQUIPMENT; and
- use METHODS.

The above undertaking may be made subject to the condition that those who seek licences agree to reciprocate."

171. My task in interpreting and applying clause 6.1 to this dispute is very considerably eased by the issues which have been resolved in previous judgments, in particular, *UPHC*, *UPCA*, *UPSC*, *Optis F* and *Optis F CA*.

172. The interpretation of clause 6.1 is a matter of French law. The parties have adduced evidence of French law to enable me to carry out that interpretation. However, Lenovo also reminded me of the effect of section 4(2) and 4(4) of the Civil Evidence Act 1972, as explained by Warren J. in *Joint Stock Co. 'Aeroflot-Russian Airlines' v Leeds & Ors* [2017] EWHC 150 (Ch). It is not necessary to discuss his reasoning in detail. It suffices to note his suggestion at [23] that:

".... putting it at a high general level, one of the purposes of section 4(2) is to enable a person in a subsequent case to rely on

the reasoned conclusions of a judge in an earlier case without the need to commission fresh expert evidence. Although there is a presumption under section 4(2)(b) that, where a finding or decision as to foreign law is adduced in evidence, that law is in accordance with the finding or decision, that is only a presumption. It is open to challenge, as the closing words of paragraph (b) ("unless the contrary is proved") demonstrate."

173. In accordance with that case, the parties seemed in agreement that, to the extent that Meade J. made findings as to French law in *Optis F*, I should follow them unless I was persuaded any were wrong. Naturally, the same point applies to *UPHC*, *UPCA* and *UPSC*. Since I am entirely in agreement with the findings which Meade J. made (and the appeals challenging them were dismissed), I am able gratefully to adopt his analysis, as well as the earlier analysis in *UP*.

THE UNWIRED PLANET JUDGMENTS

174. For any Judge having to adjudicate on this type of FRAND trial, the Judgment of Birss J. in *UPHC* repays careful consideration, both for the principles he set out but also for his observations on the practicalities of this type of trial, a topic to which I return below.
175. Although the issues narrowed in the appeals from his judgment, subject to only one point, his analysis was either not challenged at all or was upheld in the appeals. The one point concerned his conclusion at [164] that for a given set of circumstances there will only be one set of FRAND terms and only one FRAND rate.
176. In *UPCA*, the Court of Appeal disagreed:

"121. We have come to a different conclusion from that of the judge on the question whether there can be only one set of FRAND terms for any given set of circumstances. Patent licences are complex and, having regard to the commercial priorities of the participating undertakings and the experience and preferences of the individuals involved, may be structured in different ways in terms of, for example, the particular contracting parties, the rights to be included in the licence, the geographical scope of the licence, the products to be licensed, royalty rates and how they are to be assessed, and payment terms. Further, concepts such as fairness and reasonableness do not sit easily with such a rigid approach. In our judgment it is unreal to suggest that two parties, acting fairly and reasonably, will necessarily arrive at precisely the same set of licence terms as two other parties, also acting fairly and reasonably and faced with the same set of circumstances. To the contrary, the reality is that a number of sets of terms may all be fair and reasonable in a given set of circumstances."

177. As Arnold LJ noted in *Optis F CA* at [61], the context and purpose of the ETSI IPR Policy in general and of clause 6.1 in particular, were authoritatively analysed in *UPSC* in the following important passage:

“7. The purpose of the ETSI IPR Policy is, first, to reduce the risk that technology used in a standard is not available to implementers through a patent owner's assertion of its exclusive proprietary interest in the SEPs. It achieves this by requiring the SEP owner to give the undertaking to license the technology on FRAND terms. Secondly, its purpose is to enable SEP owners to be fairly rewarded for the use of their SEPs in the implementation of the standards. Achieving a fair balance between the interests of implementers and owners of SEPs is a central aim of the ETSI contractual arrangements.

The ETSI IPR Policy

8. The ETSI IPR Policy (‘the IPR Policy’) is a contractual document, governed by French law. It binds the members of ETSI and their affiliates. It speaks (clause 15(6)) of patents which are inevitably infringed by the sale, lease, use, operation etc of components which comply with a standard as ‘Essential IPR’. By requiring an IPR holder whose invention appears to be an Essential IPR to give an irrevocable undertaking to grant a licence of the IPR on FRAND terms, it creates a ‘stipulation pour autrui’, in other words an obligation which a third-party implementer can enforce against the IPR holder. The IPR Policy falls to be construed, like other contracts in French law, by reference to the language used in the relevant contractual clauses of the contract and also by having regard to the context. In this case, that context is both the external context and the internal context of the IPR Policy document itself, such as the policy objectives declared in the document.

9. The external context includes (i) the Guidance (above) which ETSI has produced on the operation of the IPR Policy, (ii) ETSI's statutes (above), (iii) the globalised market which ETSI and other SSOs were and are seeking to promote, which we have discussed in para 4 above, and (iv) the fact that ETSI is a body comprising experts and practitioners in the telecommunications industry who would be expected to have a good knowledge of the territorial nature of national patents, the remedies available to patent owners against infringement of their patents, the need to modify by contract the application of patent law to promote the development of a globalised market in telecommunications products, and the practice of the industry in negotiating patent licensing agreements voluntarily.

10. The policy statements which provide the internal context include the objectives set out in clause 3 of the IPR Policy. They include the statement in clause 3.1 that the IPR Policy:

‘seeks to reduce the risk to ETSI, MEMBERS, and others applying ETSI STANDARDS and TECHNICAL SPECIFICATIONS, that investment in the preparation, adoption and application of STANDARDS could be wasted as a result of an ESSENTIAL IPR for a STANDARD or TECHNICAL SPECIFICATION being unavailable.’

That statement clearly reveals a policy of preventing the owner of an Essential IPR from ‘holding up’ the implementation of the standard. But that policy is to be balanced by the next sentence of clause 3.1 which speaks of seeking a balance, when achieving that objective, ‘between the needs of standardization for public use in the field of telecommunications and the rights of the owners of IPRs’. The importance of protecting the rights of the owners of IPRs is declared in the second policy objective (clause 3.2) in these terms: ‘IPR holders whether members of ETSI and their AFFILIATES or third parties, should be adequately and fairly rewarded for the use of their IPRs in the implementation of STANDARDS and TECHNICAL SPECIFICATIONS.’ This objective seeks to address the mischief of ‘holding out’ by which implementers, in the period during which the IPR Policy requires SEP owners not to enforce their patent rights by seeking injunctive relief, in the expectation that licence terms will be negotiated and agreed, might knowingly infringe the owner’s Essential IPRs by using the inventions in products which meet the standard while failing to agree a licence for their use on FRAND terms, including fair, reasonable and non-discriminatory royalties for their use. In circumstances where it may well be difficult for the SEP owner to enforce its rights after the event, implementers might use their economic strength to avoid paying anything to the owner. They may unduly drag out the process of licence negotiation and thereby put the owner to additional cost and effectively force the owner to accept a lower royalty rate than is fair.

11. Having looked at context, we turn to the operative clauses of the IPR Policy. A member of ETSI is obliged to use its reasonable endeavours to inform ETSI in a timely manner of Essential IPRs during the development of a standard or technical specification. If a member submits a technical proposal for a standard or technical specification it is obliged to inform ETSI of its IPRs which might be essential (clause 4.1). Clause 4.3 confirms that this obligation of disclosure applies to all existing and future members of a ‘patent family’ and deems the obligation in respect of them to be fulfilled if an ETSI member has provided details of just one member of the patent family in a timely manner, while also allowing it voluntarily to provide information to ETSI about other members of that family. A ‘patent family’ is defined as “all the documents having at least one priority in common, including the priority document(s)

themselves' and 'documents' in this context means 'patents, utility models, and applications therefor' (clause 15(13)). The patent family thus extends to patents relating to the same invention applied for and obtained in several jurisdictions. It shows an intention for the arrangement to apply internationally. This is important because the undertaking to grant a licence under clause 6, to which we now turn, extends to all present and future Essential IPRs in that patent family.

12. The key to the IPR Policy is clause 6, which provides the legal basis on which an owner of an Essential IPR gives an irrevocable undertaking to grant a licence and thereby protects both ETSI and implementers against 'holding up'. Clause 6.1 provides so far as relevant:

'When an ESSENTIAL IPR relating to a particular STANDARD or TECHNICAL SPECIFICATION is brought to the attention of ETSI, the Director-General of ETSI shall immediately request the owner to give within three months an irrevocable undertaking in writing that it is prepared to grant irrevocable licences on fair, reasonable and non-discriminatory ('FRAND') terms and conditions under such IPR ...'

It provides that the licences must at least cover the manufacture of equipment, the sale, lease or other disposal of equipment so manufactured, and the repair, use or operation of such equipment. FRAND licensing undertakings made pursuant to clause 6 are intended to bind all successors-in-interest in respect of a SEP, and upon transfer of a SEP the SEP owner is required to take steps to ensure that this is achieved (clause 6.1bis). The undertaking made in respect of a specified member of a patent family is applied to all existing and future Essential IPRs of that patent family unless specified IPRs are excluded in writing when the undertaking is made (clause 6.2). It is envisaged in the IPR Policy that this process will usually take place while ETSI is working to create a standard because clause 6.3 provides that, if the IPR owner does not grant the requested undertaking, relevant office-bearers in ETSI will decide whether to suspend work on the relevant parts of the standard or technical specification until the matter is resolved, or to submit any relevant standard or technical specification for adoption. Similarly, if, before a standard or technical specification is published, an IPR owner is not prepared to license an IPR, clause 8.1 provides for the adoption of a viable alternative technology for the standard or technical specification if such a technology exists. If such technology does not exist, clause 8.1 provides an option for work on the standard or technical specification to cease. If the refusal to grant a licence occurs after ETSI has published a standard or a technical specification, clause 8.2 provides the option of

modifying the standard so that the relevant IPR is no longer essential.

13. Clause *6bis* instructs members of ETSI to use one of the declaration forms annexed to the Policy. So far as relevant, the licensing declaration is an irrevocable declaration by the declarant and its affiliated legal entities that, to the extent that disclosed IPRs are or become and remain Essential IPRs, they (a) are prepared to grant irrevocable licences in accordance with clause 6.1, and (b) will comply with clause *6.1bis*.

14. It appears from this brief review of the IPR Policy in its context that the following conclusions may be reached. First, the contractual modifications to the general law of patents are designed to achieve a fair balance between the interests of SEP owners and implementers, by giving implementers access to the technology protected by SEPs and by giving the SEP owners fair rewards through the licence for the use of their monopoly rights. Secondly, the SEP owner's undertaking, which the implementer can enforce, to grant a licence to an implementer on FRAND terms is a contractual derogation from a SEP owner's right under the general law to obtain an injunction to prevent infringement of its patent. Thirdly, the obtaining of undertakings from SEP owners will often occur at a time when the relevant standard is being devised and before anyone may know (a) whether the patent in question is in fact essential, or may become essential as the standard is developed, in the sense that it would be impossible to implement the standard without making use of the patent and (b) whether the patent itself is valid. Fourthly, the only way in which an implementer can avoid infringing a SEP when implementing a standard and thereby exposing itself to the legal remedies available to the SEP owner under the general law of the jurisdiction governing the relevant patent rights is to request a licence from the SEP owner, by enforcing that contractual obligation on the SEP owner. Fifthly, subject only to an express reservation entered pursuant to clause 6.2, the undertaking, which the SEP owner gives on its own behalf and for its affiliates, extends to patents in the same patent family as the declared SEP, giving the implementer the right to obtain a licence for the technology covering several jurisdictions. Finally, the IPR Policy envisages that the SEP owner and the implementer will negotiate a licence on FRAND terms. It gives those parties the responsibility to resolve any disputes as to the validity of particular patents by agreement or by recourse to national courts for determination.”

178. As Arnold LJ also noted at [62], there is much else in *UPSC* which is relevant not just to *Optis F CA* but also to all FRAND disputes, but to keep the length of this judgment within reasonable limits, I will cite Arnold LJ's selection of the following additional paragraphs from *UPSC*:

“61. ... Nor do we construe the IPR Policy as prohibiting the SEP owner from seeking in appropriate circumstances an injunction from a national court where it establishes that an implementer is infringing its patent. On the contrary, the IPR Policy encourages parties to reach agreement on the terms of a licence and avoid litigation which might involve injunctions that would exclude an implementer from a national market, thereby undermining the effect of what is intended to be an international standard. It recognises that if there are disputes about the validity or infringement of patents which require to be resolved, the parties must resolve them by invoking the jurisdiction of national courts or by arbitration. The possibility of the grant of an injunction by a national court is a necessary component of the balance which the IPR Policy seeks to strike, in that it is this which ensures that an implementer has a strong incentive to negotiate and accept FRAND terms for use of the owner’s SEP portfolio. The possibility of obtaining such relief if FRAND terms are not accepted and honoured by the implementer is not excluded either expressly or by necessary implication. The IPR Policy imposes a limitation on a SEP owner’s ability to seek an injunction, but that limitation is the irrevocable undertaking to offer a licence of the relevant technology on FRAND terms, which if accepted and honoured by the implementer would exclude an injunction.

...

90. ... In the final analysis, the implementers and the SEP owners in these appeals are inviting a national court under the current IPR Policy to rule upon and enforce the contracts into which the SEP owners have entered. If it is determined that the SEP owners have not breached the FRAND obligation in the irrevocable undertakings they have given, they seek to enforce by obtaining the grant of injunctive relief in the usual way the patents which have been found to be valid and to be infringed. The English courts have jurisdiction to rule upon whether the UK patents in suit are valid and have been infringed, and also have jurisdiction to rule on the contractual defence relied upon by the implementers based upon the true meaning and effect of the irrevocable undertaking the SEP owners have given pursuant to the ETSI regime. In agreement with Birss J (para 793), we observe that Huawei is before this court without a licence in respect of infringed UK patents when it had the means of obtaining such a licence. ...

...

164. There are ... no grounds in this case for a concern of the kind expressed by Kennedy J in the *eBay* case. The threat of an injunction cannot be employed by the claimants as a means of charging exorbitant fees, or for undue leverage in negotiations,

since they cannot enforce their rights unless they have offered to license their patents on terms which the court is satisfied are fair, reasonable and non-discriminatory.

...

166. ... in a case of the present kind, an award of damages is unlikely to be an adequate substitute for what would be lost by the withholding of an injunction. The critical feature of a case of this kind is that the patent is a standard technology for products which are designed to operate on a global basis. That is why standard technology is essential, and why the patent-holders whose patents are accepted as SEPs are required to give an undertaking that licences will be made available on FRAND terms. Once the patents have been accepted as SEPs, it may well be impractical for the patent-holder to bring proceedings to enforce its rights against an infringing implementer in every country where the patents have been infringed. That is because ... the cost of bringing enforcement proceedings around the world, patent by patent, and country by country, would be ‘impossibly high’.

167. In those circumstances, if the patent-holder were confined to a monetary remedy, implementers who were infringing the patents would have an incentive to continue infringing until, patent by patent, and country by country, they were compelled to pay royalties. It would not make economic sense for them to enter voluntarily into FRAND licences. In practice, the enforcement of patent rights on that basis might well be impractical ... An injunction is likely to be a more effective remedy, since it does not merely add a small increment to the cost of products which infringe the UK patents, but prohibits infringement altogether. In the face of such an order, the infringer may have little option, if it wishes to remain in the market, but to accept the FRAND licence which *ex hypothesi* is available from the patent-holder. However, for the reasons explained in paras 164-165, that does not mean that the court is enabling the patent-holder to abuse its rights.”

179. Finally, and partly because Lenovo placed particular reliance on these paragraphs, I cite [114] and [119]. These paragraphs appear in the section of the *UPSC* judgment where the Court was dealing with whether the Non-Discrimination obligation was ‘general’ or ‘hard-edged’. In [113], the Court held the FRAND undertaking in clause 6.1 imports a single, unitary obligation, and continued:

‘114. The text of clause 6.1 lends itself naturally to being read in this unitary way. The “non-discriminatory” part of the relevant phrase gives colour to the whole and provides significant guidance as to its meaning. It provides focus and narrows down the scope for argument about what might count as “fair” or

“reasonable” for these purposes in a given context. It indicates that the terms and conditions on offer should be such as are generally available as a fair market price for any market participant, to reflect the true value of the SEPs to which the licence relates and without adjustment depending on the individual characteristics of a particular market participant. Put another way, there is to be a single royalty price list available to all.’

180. The Supreme Court then went on to note that a powerful indication that the ND obligation is general and not ‘hard-edged’ was the fact that ETSI had considered and rejected the imposition of a ‘most favourable licence’ clause in the undertaking. The Court noted that a ‘most favourable licence’ term had been included in the 1993 draft IPR Policy, but was deleted from the undertaking in 1994. In [119], the Court noted that Judge Selna had also noted the deletion:

‘119. In *TCL Communication Technology Holdings Ltd v Telefonaktiebolaget LM Ericsson* Case No 8:14-cv-00341-JVS-DFM (CD Cal, Nov 8, 2017), the US District Court for the Central District of California noted the deletion and regarded it as providing guidance regarding the interpretation of the FRAND obligation (pp 13-14 and 91). The Court of Appeal, in the judgment below, took the same view: para 199. We agree.’

UPHC

181. As part of his discussion of the applicable principles in *UPHC*, I note that Birss J. in [89]-[97] referred to all the significant earlier cases including those I have mentioned above. In [92] he cited the succinct summary of the purpose of FRAND by the Guangdong High People’s Court in *Huawei v InterDigital*. Like Birss J. I agree with that summary.
182. On the Conduct part of this case, I refer to two discrete points in the Judgment of Birss J. in *UPHC*:
- i) First, his characterisation of ‘hold up’ in [92], namely:

‘the ability of the owner of a SEP to hold implementers to ransom by reason of the incorporation of the invention into the standard by declining to grant them a licence at all or only granting one on unfair, unreasonable or discriminatory terms.’
 - ii) Second, his characterisation of ‘hold out’ at [95]:

‘The idea is that an unscrupulous licensee may use their economic strength to avoid paying anything to a patentee, unduly dragging out the process of licence negotiation, thereby putting the patentee to additional cost and forcing it to accept a lower royalty rate than is fair.’

Optis F

183. In the judgment of Meade J, I am well aware that his analysis followed a good deal of citation by him from *UPSC*, brief reference to *UPCA*, followed by a good deal of citation from *UPHC* and *UPHC Remedies* (see generally the whole section in *Optis F* from [71]-[134]). I do not propose to lengthen this judgment by repeating that citation, but I have all of it very much in mind.
184. Therefore, I can start by gratefully adopting and endorsing Meade J.'s analysis and interpretation of clause 6.1 of the ETSI IPR Policy from his *Optis F* judgment. I can summarise the relevant findings as follows:
- i) Clause 6.1 applies to parties of all kinds and sizes and has effect internationally. Its interpretation should not be undertaken exclusively or excessively through a UK lens [275].
 - ii) Hold-out by implementers is to be deprecated [276]. That observation must be read in conjunction with the earlier section of his judgment on 'Hold-out and Delay' from [236]-[244]. Although his findings in that section were based on evidence he heard, the evidence which I heard supports the general points which Meade J. accepted at [240]-[241].
 - iii) Any person interested in implementing an ETSI standard must be entitled to have a licence on FRAND terms on demand to a patentee which has given the relevant undertaking. The class of beneficiaries is a very broad one [278].
 - iv) What such a person must be entitled to is to have and to take a licence, and to operate under a FRAND licence. It follows it is not the intention of clause 6.1 for a party using the technology of a SEP to have the benefit of the patentee's FRAND undertaking in terms of immunity from being sued (or, I add, immunity from being enjoined from using the SEP) without the corresponding burden of taking a licence [279]. In other words, the key concept is that an implementer is not entitled to the benefit of the FRAND undertaking without accepting the burden [283].
 - v) The class of beneficiaries of the stipulation of clause 6.1 comprises any undertaking which wants a licence to work a relevant standard by any commercial activities and which intends to work the standard under a licence from the SEP owner [285].
185. Although Optis argued that to be a beneficiary under clause 6.1 the potential licensee must commit to take a licence on FRAND terms set by a Court in default of agreement, it is very clear from [283] that Meade J. saw the language of 'commitment' as being tied too much to UK practice, where there is a period between the finding of infringement of a valid SEP and the FRAND trial. Hence, he preferred to express his findings as I have set out above i.e. in terms of whether the implementer intended to operate under a licence.
186. Meade J. also decided that:

- i) Had it been right and necessary for him to decide whether a commitment to take a licence at some later point could and should be implied under French law, he would have held that it could and should [287].
- ii) There was also a simpler way to look at matters. In the situation which presented itself in that case, Apple had been found to be infringing one of Optis's SEPs. Apple therefore needed a licence immediately if it was not to be acting unlawfully. Thus, Apple needed to call for and take a FRAND licence as soon as it was found to be infringing a valid SEP. In French law terms, Meade J. indicated that the stipulation does not take effect and confer on Apple the benefit of a FRAND licence until it is accepted [288].
- iii) Therefore, the way for Apple to remedy the situation, as a matter of UK procedure, was to give an undertaking to take whatever licence was to be set at the FRAND trial in the *Optis v Apple* litigation [289].

187. As Meade J. also made clear, in that case Apple's agreement to take a licence was contingent. For the purposes of Optis F, the Judge assumed (as Apple asserted) that it had made a licence offer within the FRAND range. However, Apple was still not prepared to commit to take a licence on the point within the FRAND range that the UK Court was to settle at Trial E. As Meade J. put it at [290]:

‘It only “wants” a licence on its own terms and at a time of its own choosing, and then only conditionally; it reserves the right to say no altogether. Its contention is that it ought to be able to use Optis' technology for another year and then, if it declines to take the FRAND terms on offer, *never* to have had a licence.’

188. I recognise at once that Lenovo's position is somewhat different, but, critically, at least at the start of trial, it also had a contingent willingness. Lenovo's position shifted during the trial, but it remained contingent in at least one respect, namely, it would accept the FRAND terms in this judgment provided they were acceptable to it.

189. There are further points to note from Meade J.'s section on Interpretation of clause 6.1. The first is that, depending on the circumstances, the case for an injunction may be fact sensitive or fact insensitive. The second is to note that Meade J. rejected Optis' argument that if an implementer fails to commit to take a FRAND licence at the relevant time (i.e. on a finding of infringement of a valid SEP) then it permanently loses its right to a FRAND licence (see [299]-[302]). Meade J. gave reasons why Optis' position ran counter to the purpose of clause 6.1. I respectfully agree entirely.

190. As indicated above, InterDigital runs essentially the same argument here, as part of its fact sensitive case (as I understood it): because Lenovo failed to commit unconditionally at the time of the Trial A judgment to take a licence on whatever terms were determined to be FRAND at this trial, that they have lost the right to a FRAND licence. As I also indicated above, there is a simple and straightforward reason why such arguments cannot possibly succeed – it is

because the SEP owner's undertaking to ETSI is irrevocable. Thus, provided Lenovo adopt the position of a willing licensee, they are entitled to accept the benefit of that undertaking at any time.

191. Apple also argued that injunctive relief should be refused as a matter of discretion, on various grounds, one of which was that there were issues relevant to the exercise of the Court's discretion which would only be determined at the FRAND trial and there is no detriment to the SEP owner in having to wait until the FRAND trial to obtain an injunction. On that last point, I note Meade J.'s reasoning at [340]:

'As to the allegation that the SEP owner is not prejudiced by having to wait for its injunction, I have found above that damages are not an adequate remedy, and that (among other things) having to wait in a state of uncertainty as to whether other proceedings in other jurisdictions are needed is a form of potential hold-out which damages the patentee. To make the patentee wait for a year or more (it would have been two years had the patent in Trial A not expired) from infringement finding to FRAND trial would be almost like a compulsory licence, and that is not justified. It is not just a question of an interim position pending a further determination but a substantive loss of rights for the patentee in respect of an ageing property right.'

192. Having concluded that Optis was substantially correct about the meaning of clause 6.1 and that Apple should be enjoined unless it committed to taking a FRAND licence on the terms to be decided at the FRAND trial in that case, Meade J. gave Apple a short time to consider whether so to commit.
193. It is apparent from the parts of the resulting Order made by Meade J, cited in *Optis F CA*, that Apple did so commit, subject to exercising their right of appeal against Optis F, and gave an undertaking in the following terms, as the price for Apple relying on Optis' undertaking to ETSI under clause 6.1 of the ETSI IPR Policy:

'Apple undertakes to enter into a licence in the form that is determined to be FRAND at Trial E in these proceedings or, to the extent that there are any appeals of the judgment in Trial E, a licence that is finally determined to be FRAND on appeal.'

Optis F CA

194. Two of the four grounds on which Apple obtained permission to appeal and all three of the grounds on which Optis had permission concerned the proper interpretation of clause 6.1. Arnold LJ gave the judgment of the Court of Appeal, Elisabeth Laing and Asplin LJJ agreeing. I consider it is fair to say that the respective challenges on interpretation of clause 6.1 were dismissed in short order and in trenchant terms, as were Apple's remaining grounds which were concerned with Apple's argument based on the competition side of the case and a procedural objection.

195. Nonetheless the whole of the Judgment repays reading and there are passages in the Judgment of Arnold LJ which I find useful to keep in mind:
- i) First, his explanation of the general background to the specific dispute between Optis and Apple at [4]-[15], all of which applies to this case, including his description of hold up and hold out at [7].
 - ii) Second, at [61] and [62], his citation of key paragraphs from *UPSC*, namely [7]-[14], [61], [90], [164] and [166]-[167] (which I have set out above), followed by this useful summary at [63]:

‘It can be seen from the Supreme Court’s analysis that clause 6.1 must be interpreted in a manner which avoids both hold up by the SEP owner and hold out by an implementer. Hold up by the SEP owner will be avoided by ensuring that the SEP owner is held to its ETSI Undertaking. Hold out by the implementer will be avoided by allowing the SEP owner to enforce its normal right under the general law to obtain an injunction to prevent infringement of the SEP by the implementer save to the extent that this would be inconsistent with the SEP owner’s ETSI Undertaking.’

Other ETSI materials: The ETSI Guide

196. In addition to the ETSI IPR Policy, ETSI also publishes the ETSI Guide on Intellectual Property Rights (**‘the ETSI Guide’**). The ETSI website states that the ETSI Guide ‘is intended to help ETSI members and any other party involved in ETSI’s standardization activities to understand and implement the ETSI IPR Policy. [The] Guide provides information on how to handle IPR matters in ETSI and does not replace the ETSI IPR Policy which takes precedence in all cases.’
197. For present purposes I highlight certain statements in the ETSI Guide which provide additional information for the interpretation of clause 6.1 and how parties are expected to conduct themselves. In the trial bundles I was presented with two versions of the ETSI Guide, dated 1 September 2004 and 19 September 2013, but there is no material difference in the statements I draw attention to. In fact, it appears that the ETSI Guide has grown over the years by the addition of additional guidelines but without existing guidelines being changed.
198. Section 4.1 of the ETSI Guide makes a number of points:
- i) First, commercial issues ‘shall not be addressed within ETSI’, not least because discussing licensing issues would significantly delay the discussions in ETSI’s technical bodies.
 - ii) Second, ‘voluntary, unilateral, public, ex ante disclosures of licensing terms by licensors of Essential IPRs, for the sole purpose of assisting members in making informed (unilateral and independent) decisions in relation to whether solutions best meet the technical objectives, are not prohibited under ETSI Directives. Licensing terms from such disclosures may, in some circumstances, improve transparency for

individual members in considering technologies for inclusion in STANDARDS and TECHNICAL SPECIFICATIONS.’

- iii) Third, there is no obligation on any member to disclose any licensing terms related to any of its IPRs.

199. Next, sections 4.4 and 4.5, which I quote in full:

"4.4 Notice on the use of NDAs in IPR negotiations

It is recognized that Non Disclosure Agreements (NDAs) may be used to protect the commercial interests of both potential licensor and potential licensee during an Essential IPR licensing negotiation, and this general practice is not challenged. Nevertheless, ETSI expects its members (as well as non-ETSI members) to engage in an impartial and honest Essential IPR licensing negotiation process for FRAND terms and conditions.

4.5 Financial contingency

Members developing products based on standards where there may be Essential IPRs, but there is uncertainty, have mechanisms available which they can use to minimize their risk. As a non-exclusive example, a member might wish to put in place financial contingency, based on their assessment of “reasonable”, against the possibility that further/additional license fees might become payable."

- 200. Section 4.4 is diplomatically worded. The widespread use of NDAs is ‘not challenged’, but the strain with the second sentence is evident. There is no doubt in my mind that the SEP universe would be able to converge on and agree FRAND terms very much more quickly if the basics of each SEP licence were made public (by ‘basics’ I mean the number of units covered, the royalty rates or total sum paid/payable and which standards are involved). In other words, the market for mobile telephony SEP licences would work very much more smoothly with transparency of what terms had been agreed in the past.
- 201. However, it is apparent that, for ETSI, to require transparency was a step too far. Instead, there is the stated expectation that those who are subject to the ETSI undertaking should engage in an impartial and honest licensing negotiation process for FRAND terms and conditions.
- 202. This has implications for how the SEP licensor should conduct itself as a willing licensor. Consider the following example: a SEP licensor makes an offer to licence an implementer on the basis of payment of a lump sum of \$100m for a 10-year licence period. The implementer responds by saying it has insufficient information to be able to assess the offer and requests details, under an NDA, of other PLAs which the SEP licensor has concluded with similarly situated licensees. The SEP licensor does not provide the information. Subsequently, at a FRAND trial, after disclosure and expert evidence, the Court concludes that the FRAND rate for a 10-year licence is indeed \$100m. Does that result mean

the SEP licensor was a willing licensor? I consider it does not. As Birss J. said in *UPHC*, FRAND is a process. A willing licensor and willing licensee engage in that process to agree FRAND rate(s). It is not FRAND nor is a licensor acting as a willing licensor if it refuses to provide the information necessary for a willing licensee to evaluate an offer which has been made.

203. As to section 4.5, it seems to me that this financial contingency provision makes perfect sense. A willing licensee would set aside, whether notionally or otherwise, funds to pay for the licences needed to implement a particular standard, even where the precise amounts required may well be uncertain. Furthermore, pending agreement or determination as to the actual FRAND royalties due, a willing licensee might well make certain payments on account to demonstrate his willingness, although if he is being deprived of necessary information, these payments might well be on the low side.

Other ETSI Materials: the FAQs page

204. Finally, I was also provided with a version of the ETSI IPR Policy FAQs page from July 2014. Part of two answers in particular are revealing:
- i) First, in answer 4: ‘It is the responsibility of each STANDARD user to contact directly the patent owner.’;
 - ii) Second, in answer 6: ‘It is necessary to obtain permission to use patents declared as essential to ETSI’s standards. To this end, each standard user should seek directly a license from a patent holder.’
205. These answers reinforce the point that a willing licensee does not sit back and wait for demands from SEP licensors. At the same time as setting aside funds to pay for the necessary licences, the willing licensee takes active steps to seek out the licences that it needs and, as a first step, this means making contact with the SEP owners, whose identities can be readily ascertained from ETSI.

HOW THE ISSUES ON CLAUSE 6.1 AND FRENCH LAW EVAPORATED

206. At this point, it is convenient to deal with this topic, before returning to points which remain in issue.
207. Due, no doubt, to *UPSC* and *Optis F*, the parties were able to agree a good deal in relation to the ETSI IPR Policy and relevant issues of French Law. However, certain important issues remained. Lenovo’s position was that this case raised issues which had not been considered before, particularly in *Optis*. Lenovo emphasised that in *Optis*, Meade J was considering the situation where the only Court which could set global FRAND terms was the UK court, whereas here Lenovo point to the extant proceedings in the US and in China.
208. I must explain the scenarios which have been canvassed before me:
- i) InterDigital’s initial position was that I should settle the terms of the global FRAND licence between these parties, amongst which should be

what Lenovo called the ‘muzzle’ clause, requiring the abandonment of both the US and Chinese proceedings.

- ii) At the other extreme, Lenovo’s initial position was that it was willing to give an undertaking to accept a FRAND licence settled by the UK Court (a) for at least the whole world except the US, China and non-patent countries or (b) for the whole world provided that InterDigital gave reciprocal undertakings to respect the decisions of the US and Chinese Courts for sales where the protection is governed by infringements in those jurisdictions.
- iii) In between those extremes, various intermediate positions were hinted at during submissions including in particular the option where I set global FRAND terms, allow the parties to continue with the US and Chinese proceedings as they so wish and to provide a mechanism for adjusting the financial terms depending on any rulings which either the US or Chinese courts may make as to FRAND rates in their particular territories.
- iv) Once again, there was an element of conditionality in Lenovo’s position. If Lenovo decides that the terms I set are acceptable, then I was left with the impression that Lenovo would not then continue with the US or Chinese proceedings, to the extent Lenovo would be able to bring them to an end within the powers of the court in question.

209. It is important to be clear about the foreign proceedings between these two parties, because Lenovo tended to be rather vague as to what was actually in issue or to be decided in the foreign proceedings.

Other proceedings between these parties

210. To my understanding, the existing position is as follows (and I recognise that the foreign courts are in charge of the scope of proceedings before them).

211. So far as the US proceedings are concerned, the following summary is based on the unchallenged evidence of Michael B Levin, who is a partner at the firm with conduct of InterDigital’s case(s) in the US against Lenovo.

212. In late August 2019, shortly after the commencement of this action, InterDigital brought a claim for patent infringement and declaratory relief in Delaware. Some 7 months later, Lenovo commenced a claim for breach of contract and violations of the Sherman Act in Delaware.

213. In part, Lenovo’s Delaware claims have been struck out, and in part consolidated with InterDigital’s claim. InterDigital say that as constituted, the US action will not settle the terms of a global (or even US) FRAND licence, although the parties do seek declarations relating to the parties’ FRAND conduct. The trial in the Delaware actions was, at the time of the relevant evidence, scheduled for December 2022, but there was a prospect that it might be delayed if the trial judge was elevated to the appellate bench. If the trial is not delayed, judgment would be expected in the first half of 2023.

214. In August 2020, Lenovo commenced a series of inter partes review proceedings ('IPRs') before the Patent Trial and Appeal Board ('PTAB'), challenging the validity of the 8 patents asserted in InterDigital's infringement claim. Of these petitions, 5 were denied institution, and 4 of those decisions are final. (At the time of trial) three petitions had been instituted and were due to be decided by February and April 2022, with a right of appeal to the US Court of Appeals for the Federal Circuit, in which an appeal typically takes a year or more to be determined.
215. Lenovo place particular reliance on the fact that on 14 May 2020, InterDigital made a proposal that FRAND terms exclusively should be determined by the Delaware court, in the following terms:
- “Provided that it is agreed that doing so will fully resolve the parties disputes and proceedings, InterDigital is willing to consent to submitting to the Delaware District Court a single claim settling binding worldwide terms (including rates) for a FRAND licence for the Lenovo Group to the [InterDigital] 3G/4G Portfolio, provided also that your clients are also so willing and will proceed in Delaware without delay, and on condition that your clients provide an irrevocable undertaking [to be bound by the terms of a FRAND licence resulting from the Delaware District Court to the InterDigital 3G/4G Portfolio]”
216. Lenovo says it was amenable to such an approach in principle but made a counter-offer to the effect that the approach should incorporate the decision of the Chinese Court for products manufactured and sold either in China or for countries where there was no patent protection. Neither offer was taken up. Lenovo now accuses InterDigital of taking a position in this action inconsistent with its May 2020 offer.
217. Be that as it may, I received clear evidence from the US law experts that courts in the US will only set global FRAND terms when the SEP licensor and the potential licensee agree to such a determination. The position is that these parties have not so agreed.
218. So far as proceedings in China are concerned, the following is based on the unchallenged witness statement of Dr Fang Qi who has responsibility for InterDigital's conduct of the proceedings involving Lenovo in China.
219. Various Lenovo companies commenced a claim on 10 April 2020 in the Beijing Intellectual Property Court against various InterDigital companies requesting the Court determine FRAND licensing conditions for all Chinese 3G, 4G and 5G SEPs owned by InterDigital. InterDigital responded with a challenge to jurisdiction, which was dismissed in a judgment dated 8 November 2021, which I understand has been appealed by InterDigital in circumstances where the appeal may take 3-4 months to be resolved. Whether an appeal takes place or not, Dr Qi considered a first instance judgment on the claim will be handed down towards the end of 2023.

220. Lenovo also commenced a series of invalidity petitions against 17 of InterDigital's Chinese patents before the China National Intellectual Property Administration ('CNIPA'). Decisions at first instance have been issued on all 17. Nine of those petitions have been upheld and the patent declared wholly invalid – InterDigital have appealed all of them. Five of the patents were held wholly valid, and four of those decisions have been appealed. The remaining three patents were partially invalidated, two of which were held valid on amended claims. InterDigital's appeals were at the time of trial expected to be decided in about mid-2022. Lenovo's appeals were predicted to move more slowly due to service requirements and were not likely to be heard until late 2022 or early 2023.
221. For present purposes, the key points are:
- i) The Chinese proceedings will determine FRAND terms only in respect of China. Although the financial difference may be slight, as InterDigital pointed out, a global FRAND licence goes further than a territory by territory licence, since it explicitly licenses roaming across borders.
 - ii) The US Court is asked to rule on conduct, but, as I understand matters, will not determine the financial terms of a FRAND licence, whether for the US or elsewhere.
222. It seemed to me that these were important points which Lenovo continually glossed over in their argument, along with an even more important consideration which is this. This court will set FRAND terms. If Lenovo or InterDigital consider that my judgment is erroneous, then the appeal procedures in this country will remedy material errors. The same is true of any other jurisdiction which is able to set global (or even national) FRAND terms. Leaving appeal procedures aside, I consider a willing licensee (a) would have already committed to take a licence on the FRAND terms to be set by this Court, indeed that commitment would have been made at the latest on the hand down of the judgment in Trial A in this action (cf. Optis F) but (b) would not make its acceptance of FRAND terms set by this Court to be conditional in the way Lenovo defined its position (see paragraphs 208.ii) and 208.iv) above).
223. In its closing, Lenovo was anxious to distance itself from any language which suggested conditionality. Instead, the issue was now framed in terms of whether Lenovo's lack of a commitment (so far) to take a licence on the terms determined by this Court made any difference since InterDigital's ETSI undertaking was irrevocable – the implication being that Lenovo could decide to take the FRAND licence at any point but pertinently at the very moment the Court would otherwise grant an injunction against Lenovo to restrain infringement of EP558 or any other SEP owned by InterDigital and found to be valid and infringed.
224. This issue has a little history which I will briefly outline.
225. HHJ Hacon heard Technical Trial A and handed down his judgment on 29 July 2021, finding EP558 valid, essential and infringed by Lenovo. It took a long

time for the form of order hearing to take place, eventually being heard on 29 and 30 November 2021. By that time, the written expert evidence of French law for this trial was complete (the first reports being served around 6 October 2021, with the reply reports served 19 November 2021).

226. Lenovo declined to undertake to take a global licence on the terms to be settled by the UK court without qualification. Before HHJ Hacon, Lenovo had two reasons why the question of whether the injunction should be granted could not be decided at that point. Only the second reason matters. Lenovo submitted that the grant of an injunction turned on matters not considered in *Optis* and which could only be resolved by full consideration at the FRAND trial following cross-examination of experts in French, Chinese and US law.
227. As recorded by HHJ Hacon at [57], Lenovo's principal point was that their application raised new points of French law not considered by Meade J, namely whether an implementer benefits from the *stipulation de contrat pour autrui* created by the SEP owner's undertaking and clause 6.1 of the ETSI IPR Policy even if it refuses to commit to take a licence settled by the court in which there has been a finding of infringement, provided it makes a reasonable proposal to commit to take a FRAND licence to be determined, in whole or in part, by a different court.
228. I note that HHJ Hacon was informed that on the working day before the hearing Lenovo had brought proceedings in China to settle a global licence, but only from the year 2024.
229. It seems to me, from HHJ Hacon's discussion and conclusion at [58]-[63], that he was narrowly persuaded that Lenovo's position (which he described as vague) did not unarguably disqualify them from the benefit of the *stipulation de contrat pour autrui* created by InterDigital's undertaking and clause 6.1 of the ETSI IPR Policy. This was, at least in part, because '*...Professor Stoffel-Munck's evidence was forthright so far as it went and there was little by way of countervailing evidence from Professor Helleringer.*' Hence, HHJ Hacon declined to grant the relief sought by InterDigital, which included a FRAND injunction.
230. Lenovo's position remained the same in its opening skeleton argument. Thus, Lenovo submitted:

'175. The general law, as stated in *Unwired Planet* is that if an implementer refuses to take a FRAND licence an injunction may be granted unless and until they do. However, a major issue left unresolved by *Unwired Planet* and more recently *Optis v Apple* is by which court or courts such a licence should be determined (if global) and what the terms of such an undertaking should be. The present case differs significantly from the position in *Optis v Apple* [2021] EWHC 2564 (Pat), and [2021] EWHC 2759 (Pat), because of its commercial and regulatory history and the existence of past and current foreign proceedings.

176. In this case, the question of whether Lenovo is a willing licensee once the English Court has decided what FRAND terms are by English rights alone cannot be determined merely on the basis of whether it was/is willing to give to the English Court an unqualified undertaking to accept whatever the English Court decides is FRAND, in the absence of mirrored undertakings from InterDigital to respect the decisions of the US and Chinese courts. Lenovo has indicated that it is willing to give an undertaking to accept a FRAND licence, settled by this Court (a) for at least the whole world except the US, China and non-patent countries, or (b) for the whole world provided that InterDigital gives reciprocal undertakings to respect the decisions of the US and Chinese Courts for sales where the protection is governed by infringements in those jurisdictions.’

231. This position was also reflected in the list of issues of French law which remained in dispute.
232. Several things which occurred during the trial meant that, by the time of closing arguments, this issue had evaporated.
233. First, it became apparent during the cross-examination of the two experts that the supposedly key issue of French law had evaporated. Instead, the issues had transformed into issues of the intentions of ETSI i.e. questions of fact and not of French law at all.
234. Second, InterDigital agreed that, instead of determining FRAND rates, the Court should simply determine a lump sum. According to Lenovo’s markup of InterDigital’s 5G Extended Offer, for a lump sum licence, Lenovo does not seek a provision that allows rates from foreign courts to be plugged in.
235. In its written closing, Lenovo nonetheless identified two remaining fundamental points of French law being (i) whether the right conferred on implementers under the ETSI FRAND undertaking remains available at all times and (ii) whether an undertaking such as the ETSI declaration must be construed as a subset of *stipulations pour autrui* which contain a ‘*corollary*’ obligation, so that a licensee must be ‘*willing*’ in order to create the FRAND right in question.
236. As to the first issue, this was determined by Meade J. in *Optis F*, as I explain below. As to the second issue, the experts agreed that whether a beneficiary of the FRAND undertaking is ‘*willing*’ is not a question of French law at all but is simply a question of fact. On this basis, Lenovo submitted that there is no support in French law for InterDigital’s fact insensitive case.
237. I am bound to say that I am left with strong suspicions that:
- i) Lenovo delayed the hearing of the Form of Order from Trial A until after it knew its expert evidence of French law would have been served.
 - ii) Professor Stoffel-Munck was encouraged to cover various issues in his report which, in reality, were not questions of French law at all, but, as

transpired, questions of fact, so as to provide Lenovo with the arguments presented to HHJ Hacon against the grant of any injunctive relief on that occasion.

238. Although I have little doubt that the ingenuity of lawyers will be used to generate fresh, undecided issues surrounding the correct approach to injunctive relief in this type of case, this type of manoeuvring is to be deprecated and is more likely to be seen as such in the future.

Chinese and US Law

239. Finally, under this main heading, I must discuss the Chinese and US law evidence with which I was presented, along with a detailed list of issues of both Chinese law and US law which were agreed and those which were in dispute. The parties did not consider it necessary for there to be any cross-examination of any of the experts on Chinese or US law. Although I found the expert reports on both Chinese and US law very interesting and educational, I remain unconvinced that there are any disputes which are necessary for me to decide for the purposes of this judgment.

240. For present purposes, I consider it is sufficient for me to have regard to the approaches so far developed by the Chinese courts to deciding appropriate FRAND royalty terms. I can summarise as follows:

- i) Chinese law does not dictate any particular approach. The approach to be taken depends on the circumstances of the case but is often tailored to the local market conditions. Chinese courts have adopted both approaches based on comparable licences as well as approaches based on a ‘top-down’ analysis. I also note that in *Huawei v Conversant*, the Nanjing Intermediate People’s Court relied on a hedonic regression pricing model to compare the market situation between China (as a developing country) and developed countries.
- ii) The most recent significant development is the jurisdictional ruling in *OPPO v Sharp* ((2020) Zui Gao Fa Zhi Min Xia Zhong No. 517) issued by the Supreme People’s Court of the People’s Republic of China on 19 August 2021. The Supreme People’s Court held that the question of jurisdiction depends on the following factors, which were summarised by Professor Kong as follows (i) whether the parties had agreed to negotiate on global licensing of SEPs, during the licensing negotiations; (ii) the countries in which the SEPs in the portfolio are registered; (iii) the principal place where the SEPs are implemented, where the implementer operates and where the implementer generates revenues; (iv) the place of the licensing negotiations and the place where the licensing agreement was executed; and (v) the place where the property of the parties is available for seizure and enforcement.
- iii) The experts were agreed that, in the light of *OPPO v Sharp*, Chinese courts would be very likely to find they have jurisdiction to settle global licences without the consent of one or more of the parties, and to exercise that jurisdiction.

- iv) The experts were also agreed that senior Chinese judges are likely to read and be interested in decisions made by foreign courts which are closely related to the case they are deciding and that, for Chinese judges deciding FRAND cases, *UPHC*, *TCL v Ericsson*, *HTC v Ericsson* and *Sisvel v Haier* would come within that category.
 - v) Professor Kong was of the view that *OPPO v Sharp* reflects this trend and developments in legal policy in China – essentially to the effect that Chinese courts increasingly take the view that they should be determining what liabilities undertakings (especially Chinese ones) should have in respect of their activities in China.
 - vi) He was also of the view that Chinese courts would expect other courts to accord appropriate respect to their decisions and approaches where those other courts were seeking to regulate conduct in China (for instance by requiring payment to be made in respect of activities in China). In this regard, he relied on the fact that there have been several well-publicised instances recently of Chinese courts issuing anti-suit injunctions to prevent decisions of foreign courts purporting to override FRAND determinations underway in China.
241. Professor Kong was also asked to comment, following *Sharp v OPPO*, on how the Chinese courts would likely react to a US-based SEP owner attempting to obtain an order from the English court to require a Chinese company to undertake to take a global FRAND licence (covering activities in China and Chinese patents) determined only by the English court without regard to principles and decisions of the Chinese courts, while proceedings were ongoing in China to determine FRAND terms for China between the two undertakings. He was of the view that although this situation has not yet come before the Chinese courts, he did not think the Chinese courts would regard that as appropriate FRAND conduct by a SEP owner.
242. With the greatest respect to Professor Kong, I doubt his last proposition would be applied in the circumstances of this case because when this action commenced, it was not known that Chinese courts would set global FRAND terms. Furthermore, the Chinese proceedings were commenced about 10 months after this action commenced with Lenovo requesting the Chinese court to set FRAND terms for China only.

PRINCIPLES APPLICABLE TO THE COMPARABLES & TOP-DOWN CASES

243. Although I address this topic under its own heading, it may be noted that there are aspects of my analysis of the ETSI materials (above) which impact on the Comparables part of the case.

UPHC

244. In terms of the practicalities, the following points from the Judgment of Birss J. (as he then was) in *UPHC* I have found useful to keep in mind. The relevance

of many is self-evident. For others, I found it useful to identify the point and then indicate how it applies in this case:

- i) First, an observation he made at [168] (albeit in the course of his analysis leading to his conclusion that there is only one set of FRAND terms) concerning the diversity of terms in real agreements in the industry. The various allegedly comparable agreements in this case demonstrated that in any licence negotiation between a SEP owner and an implementer there are many moving parts. One set of adjustments will enable a deal to be reached with one implementer, whereas different adjustments are required for a deal with another. Thus, any notion that a SEP licensor has a fixed set of terms on offer to any implementer breaks down immediately as soon as negotiations commence.
- ii) In this case, InterDigital's evidence suggested that they had a set of terms as a starting point for negotiations and this set of terms changed over time. I say 'suggested' because this evidence was somewhat vague. I acknowledge that InterDigital published a revised set of terms in 2020. Prior to that, no contemporaneous document was produced as evidencing InterDigital's set of starting terms. There was evidence that one of the smallest implementers accepted InterDigital's starting set of terms without any negotiation at all, but this was very much the exception to the rule. In other words, InterDigital's initial demand in any negotiation was very much an 'opening bid'.
- iii) Second, his confirmation at [169] that the Court's jurisdiction is not restricted to the binary question of assessing whether a given set of terms is FRAND but extends to deciding between rival proposals and coming to a conclusion different from either side's case on such a proposal.
- iv) Third, the observations at [175] that:

'Different licensees will have differing levels of bargaining power.'

'...it would not be FRAND, for example, for a small new entrant to the market to have to pay a higher royalty rate than an established large entity.'

'In my judgment, the FRAND rate ought to be generally non-discriminatory in that it is determined primarily by reference to the value of the patents being licensed and has the result that all licensees who need the same kind of licence will be charged the same kind of rate.'
- v) Fourth, the observation at [191] that unpacking prior licence agreements involves significant uncertainties (even though on the facts before Birss J., the arguments about unpacking were relatively minor), plus the additional complications he mentioned at [196] caused by discounts, royalty floors, royalty caps, release periods and pass-through licences.

- vi) Fifth, the observation at [269] that statements published by the SEP licensor in question or third party SEP licensors as to the total aggregate royalty or an individual company's share have little value for the reasons he set out, including in particular that they are obviously self-serving. By contrast, in my view judicial statements as to appropriate total aggregate royalty figures for a particular generation of technology can be useful guidelines (cf. the figures cited by Birss J. at [478] for multimode 3G at 5.6% and for multimode 4G at 8.8%).
 - vii) Sixth, that the evidence before Birss J. was clear that willing parties would agree that a worldwide licence in that case would have a different rate for China and that he found the relevant factor was 50% at [583]. Furthermore, due to the fact that the number of relevant SEP families owned by UP in China was small (1 for 3G multimode and 5 for 4G multimode), Birss J. considered it appropriate to make further separate adjustments for China by comparison of those figures with the SEP families used to derive the benchmark.
 - viii) Seventh, at [587], Birss J. divided the world outside China into Major Markets (MM) and Other Markets (OM) by reference to the number of declared SEPs in force held by UP in the relevant countries, the thresholds being 2 or more declared SEPs for 2G and 3G and 3 or more for 4G. In the circumstances of that case, he applied the China rate to OM countries on the basis that the products were manufactured in China under licence. For MM countries, the benchmark rate was scaled by the ratio of relevant MM SEP families held by UP to the SEP families used to derive the benchmark (i.e. in the UK).
 - ix) Eighth, although it appears there was no particular issue before him as to the treatment of past sales as against future sales, it is apparent that the FRAND rates which Birss J. decided upon were applied uniformly to both past handset sales made by Huawei and to future handset sales. This point is also confirmed by his final finding that, to the extent that damages should be awarded (i.e. for the UK only), they would be at the same rate as the appropriate FRAND rate.
245. On the facts and analysis before him, Birss J. considered that one comparable in particular, which he designated in the non-confidential judgment as the Q licence, was the best place to start. From that licence he derived, from the unpacked rates, an appropriate rate (of 0.80%) to use as representative of the value E of Ericsson's 4G SEP portfolio in licensing a multimode handset. His reasoning in [464] is opaque because of the redactions, but it is clear that from that 4G figure, he derived a single rate of 0.67% for 2G and 3G by scaling using a ratio derived by one of the experts from an unidentified licence. Based on this analysis, he was able to and did find appropriate FRAND rates for each of 2G, 2G/3G and 2G/3G/4G. I observe that, in any particular case, it will depend on the evidence as to whether the Judge decides it is possible and sensible to derive rates per multimode generation of technology.
246. Even though I regard the observations I quoted at paragraph 244.iii) above as self-evidently correct, I was nonetheless pleased to find them because they are

at one with a consideration which I identified very early in my encounter with this trial. I express this as follows.

247. When a mobile phone, tablet or computer uses 3G, 4G or 5G technology covered by SEPs, the royalties payable should not depend on the price of the phone (or tablet or computer), which reflects many other features (e.g. screen size, processor power and other features) which are unrelated to the licensed technology even if dependent on it, as well as the status of the brand of phone or tablet – Apple being the paradigm example of a brand able to command substantial price premiums. Accordingly, in terms of SEP licensing, each unit should be viewed as a functional unit, functioning using the relevant generation(s) of the technology. I consider this approach is consistent with, indeed dictated by, the FRAND obligation so that the royalties paid and payable for each functional unit should be the same. I observe that in the ETSI materials there is no hint at all that FRAND licensing should be on a ‘profits available’ approach (cf. the old ‘Licenses of Right’ caselaw).
248. This consideration is fundamental to my approach. As will be seen, many of the creative ways in which InterDigital sought to explain their agreements with the largest market players are inconsistent with this consideration. In short, acceptance of such creativity would involve discrimination.
249. In my view, the corollary of those points also applies regarding SEP licensors. Differing SEP licensors have differing levels of bargaining power, and these levels may vary for a given licensor over time. A smaller SEP licensor should not be disadvantaged vis-à-vis an owner of a larger share of the SEP universe in a given generation of technology. At least in theory, each should recover their ‘fair’ share of the total royalty stack, based on the value of their SEP patents.
250. More generally, these considerations focus attention on the actual licence interaction between SEP licensor and implementer, rather than on their respective individual characteristics. One particular manifestation of this arises, in my view, in the unpacking of the lump sum licences in this case: the point being that what matters is the sum which is paid by licensee to licensor. What matters far less (or even not at all) is how the licensor then accounts for the receipt of that sum in its accounts.
251. From the public version of *UPHC*, I did not detect that any issue arose over the way in which lump sums were accounted for upon receipt by the licensor. In this case, InterDigital’s fact evidence indicated that, when accounting for a lump sum payment, InterDigital applied the GAAP 5 accounting principle.

TCL v ERICSSON

252. There are several points about Judge Selna’s decision which need to be kept in mind when reviewing it:
 - i) First, Judge Selna’s decision was set aside on appeal on the ground that Ericsson had been wrongly deprived of their right under the Seventh Amendment to a jury trial on the issue of the release payment term. The

United States Court of Appeals, Federal Circuit, decided that the release payment was *in substance* compensatory relief for TCL's past patent infringing activity.

- ii) The Court of Appeals did not need to and did not rule on other points raised by Ericsson in their appeal but Ericsson made three principal criticisms of Judge Selna's methodology, the first two applying to his top-down analysis and the third to his assessment of comparables:
 - a) First, he erred in using a simple counting method which presumed each of Ericsson's SEPs to possess equal value with all other SEPs in a standard, instead of measuring the incremental value each SEP added to the standard;
 - b) Second, the court used an unreliable method to compute Ericsson's share of the total stack because of allegedly divergent approaches in calculating the numerator and denominator;
 - c) Third, Ericsson argued that the court's analysis of the comparable licences was fundamentally flawed because, *inter alia*, it rejected dollar-per-unit royalty rates as *per se* discriminatory without pointing to any legal authority.

I have not assumed that Ericsson's arguments are right or would have prevailed, but it is right to note the arguments which were made.

- iii) I do not claim to have any experience of the significance of the constitutional right under the Seventh Amendment. However, I add that, in the light of my analysis of the ETSI materials, I question the conclusion of the Court of Appeals that the release term was *in substance* compensatory relief for TCL's patent infringements in the context of a determination of worldwide FRAND terms. There are two points to consider:
 - a) The conclusion implies (particularly in the use of the term *in substance*) that the US Court has jurisdiction to determine *worldwide* damages for patent infringement or at least damages in every country where Ericsson owned a SEP. That *might* be the position in the US, but it is not the position in the UK. However, I note that Judge Selna dismissed Ericsson's infringement claims and TCL's invalidity attacks as moot in light of the relief granted in the release payment, because any damages from those infringement claims were already subsumed in the release payment determination. The conclusion of the Court of Appeals could be justified on the basis that the damages for patent infringement in the US alone justified a jury trial.
 - b) Leaving that point aside, on my analysis of the ETSI materials and obligations (see above), a willing licensee when accepting a Court's determination of FRAND terms is willing to and does pay an appropriate rate for all past sales worldwide, thereby

regularising the position of willing licensor and willing licensee. It is not a payment of damages for patent infringement and is not subject to the limitation period(s) which would apply to an award of such damages, even though the Court might well hold (as Birss J. did in *UPHC*) that the damages for infringement of the UK patents was the same as the UK FRAND rate.

- iv) Second, various criticisms have been made of Judge Selna's decision in the legal literature, and of his top-down approach in particular. I am bound to observe that commentators will always find points to criticise in judgments of this nature. These types of cases are not well suited to be determined in an adversarial system where each side presents a particular approach. Unless the Court accepts the entirety of one side's case (which is unlikely), the Court is often having to plot a varying course between the two extremes represented by each side's case and a course which may not have been the focus of either side's submissions. The Court has to do the best it can in all the circumstances and utilising the evidence which the parties put before it. Again, I have not assumed that any of the criticisms are correct, but to the extent that they impinge on my approach, I have noted them.
253. Notwithstanding those points, Judge Selna's decision repays study. In particular, I have found the following points – largely practical – useful and a number of these were specifically relied upon by Lenovo in its submissions:
254. First, I note Judge Selna's characterisation of 'hold up', which is entirely consistent with that of Birss J. quoted above: 'Hold up occurs when a patent holder seeks to extract more for the use of his patent than the value which the patent adds to a standard.'
255. Second, when he turned to consider TCL's top-down case, he noted:
- i) The appeal of a top-down approach is that it prevents royalty stacking;
- ii) If the total aggregate royalty is properly based on the total value of the patents in the standard, it can also prevent hold up;
- iii) A top-down approach cannot address discrimination and is not necessarily a substitute for a market-based approach that considers comparable licences.
256. Judge Selna decided to adopt a 'simple patent counting system which treats every patent as having identical value', an approach criticised by Ericsson on appeal. This is undoubtedly a simplification. However, to adopt any other approach requires considerably greater work in analysing the SEPs in question.
257. In deciding upon total aggregate royalty figures of 5% for 2G/3G and 6-10% for 4G, Judge Selna relied heavily on public statements made by Ericsson and other SEP owners. Although he acknowledged the approach of starting with a total aggregate royalty figure was not perfect, he considered it had merit because (1) he was relying on such public statements made to induce people to adopt

and invest in each standard when the risk of hold-up was low; (2) these statements were made before the standard was adopted, providing the SEP owners with an incentive to be reasonable with their overall expectations and ‘greatly reducing the risk of hold up and royalty stacking’; (3) Ericsson was (at the time) both licensor and licensee, giving it a stronger incentive to be fair and reasonable; (4) Ericsson still stood by these statements; (5) they at least provided a ceiling for a FRAND rate.

258. To determine the denominator (i.e. the total number of industry-wide patent families relating to handsets which are essential to the 2G, 3G and 4G standards), Judge Selna had evidence from a very extensive essentiality study, supervised by Dr Kakaes. From the study, the total estimated numbers of essential patent families worldwide was: 2G: 446; 3G: 1,166; 4G: 1796. Ericsson challenged the results on the basis that the team spent an average of 20 minutes per patent, did not read the specifications, individuals were not qualified to undertake the work and for possible bias. The Judge refused to accept the process was inherently unreliable but adjusted the total number of SEPs in each standard downwards by 11.4% because, as a result of cross-checks on their conclusions, the team was found to have over-declared to that extent.
259. A number of the comparables which Judge Selna had to unpack were lump sum licences with some familiar names: Apple, Samsung, HTC, LG and ZTE. After setting out the agreed general approach to unpacking, Judge Selna made some general observations, then proceeded to discuss four common issues.
260. In his general observations, Judge Selna observed that, when unpacking the alleged comparables, there was no requirement to follow assumptions made by Ericsson in its ‘business cases’. After signing each licence, Ericsson created a business case to memorialise some of its projections and assumptions and to act as a ‘memo to file’. Judge Selna evidently distrusted these ‘business cases’ which he said represented nothing more than after-the-fact attempts to model certain projections. He observed that one expert sometimes followed the business case, sometimes agreed with the opposing expert and sometimes made his own assumptions and continued:

‘Sound methodology should preclude the experts from cherry-picking facts from the business cases or each other’s reports they choose to accept; rather, they must provide a factual basis for their opinions. The Court is very cognizant of just how easy it is to pick particular assumptions or approaches in order to manipulate the unpacking analysis to arrive at a preferred rate for each license. The more that the unpacking analysis can be manipulated, the less it represents what the parties actually agreed to do, and therefore the less useful it is to the Court.’

261. The first issue was the correct treatment of past or released sales. Judge Selna noted that the licence agreements themselves did not spell out any basis to allocate lump sum payments between past and future sales. He was also critical of an expert who based his analysis entirely on after-the-fact statements from Ericsson which he obviously regarded as unreliable because his approach

‘would invite SEP-holders to manipulate their internal discussions and opinions towards whatever their goals are for the next FRAND dispute.’

262. It is worth setting out the reasons why Judge Selna decided to treat released sales and released payments the same as projected sales and prospective payments and to calculate a single rate over the course of the combined licence and release period:

‘The Court generally views released sales as part and parcel of the forward-looking terms of the license agreements. The Court decides this based on a pragmatic view of the negotiations between sophisticated parties. When Ericsson and Apple negotiated their license agreement, they both knew that there were unlicensed sales, and they had even engaged in substantial litigation across the globe on that very issue. (Brismark Decl.#108). To then exclude released sales and the initial lump sum payment ignores the reality that, particularly for lump sum deals, the released sales are being paid for as part of the same transaction. The Court is therefore skeptical of any unpacking which ignores released sales and an initial lump sum payment for the purposes of determining a FRAND rate. The Court believes that parties to these license agreements generally care much more about the total amount they have to pay and the total value they receive, rather than whether a payment is labeled as a release from past liability or for the future license.’

263. Judge Selna also observed: *‘It is certainly possible that parties could specifically agree to different royalty rates for released and prospective sales, but that is not the case for any of the licenses the Court unpacked.’* The same is true of the comparables presented to me, and it is to be noted this is a different point to that which arises when the SEP owner recognises in its accounts a proportion of a lump sum payment as relating to the past.
264. The second issue Judge Selna addressed was how to apportion lump sum payments between multiple standards. He observed that each apportionment to a particular standard will affect each later standard and the more assumptions the experts make, the more the licence reflects the experts' decisions rather than the parties' agreed upon royalties rates.
265. The third (and it would seem the fourth) issue concerned ‘Dollar-per-unit Rates, Caps and Floors’, which involves two separate concepts. Judge Selna noted that Ericsson had in the past entered into some licences with dollars-per-unit rates or licences with caps and floors, but he declined to adopt a dollar-per-unit approach (a point criticised in Ericsson’s appeal, but not resolved), or to impose caps or floors.
266. His reasons for rejecting a dollar-per-unit rate approach were, in summary, (1) it would be at odds with industry practice; (2) a % royalty better aligns the incentives of the SEP-holder and the licensee than a dollar-per-unit royalty. He considered this furthers ETSI’s express policy objectives of both rewarding SEP-holders and making their IP available to the public; (3) Ericsson had

repeatedly reaffirmed that the royalties should be % running royalties; and (4) Judge Selna was of the view that there was no evidence that a package of SEPs has a fixed determinable value which would justify a fixed dollar-per-unit rate or a percentage rate as modified by caps and floors.

267. As can be seen from the fourth reason, Judge Selna moved to the separate issue concerning caps and floors. I will quote the relevant passages here because Mr Djavaherian relied upon them in his evidence:

‘[T]here is no support in the record that a package of SEPs has a fixed, determinable value which would justify a fixed dollar-per-unit rate or a percentage rate as modified by floors or caps. Brismark explained that Ericsson seeks to apply a floor to its license agreements so that it can obtain a certain minimum amount of revenue for itself. ... [O]n the stand Brismark explained that its existing caps and floors are solely the product of negotiations, not any sort of analysis of whether they are fair or reasonable.’ (p69)

268. Later, Judge Selna stated:

‘Ericsson's use of floors in its rates is itself discriminatory. In the absence of a credible showing that Ericsson's SEPs add a measurable incremental value, there is no basis for essentially discriminating on the basis of the average selling price where a floor would result in a higher effective rate for lower priced phones.’ (p113)

269. With respect, I do not find any of Judge Selna’s reasons for rejecting a dollar-per-unit rate persuasive. Furthermore, even if the prevailing industry practice is to agree upon running royalties (whether with caps or floors or not), that does not mean that running royalties are necessarily FRAND or that FRAND rates must be expressed in terms of running royalties. I will assess all these points later on the basis of the evidence before me.
270. Finally, I note that InterDigital made a series of detailed submissions comparing Judge Selna’s approach with that of Mr Meyer. These were highly fact dependent and I need not discuss them.

THE COMPARABLES CASE

271. Self-evidently, the Comparables part of this case divides into two main but closely related sections. The first section is concerned with the identification of relevant comparable licences. In turn, the identification process depends on the extraction of relevant information from existing PLAs. In this case, the experts took very different approaches. This part of the case was further complicated by the experts not only using different data, but also using different approaches to the identification of relevant data.
272. Once relevant comparable licences have been identified and the relevant information extracted, in the second main section it is necessary to consider how

the information should be deployed to arrive at a FRAND rate or rates which are applicable to Lenovo.

THE SEP LICENSING LANDSCAPE

273. Whilst Mr Brismark and Mr Djavaheerian disagreed on many points, there appeared to be broad agreement between them as to the current SEP licensing landscape, albeit they differed as to the reasons for certain features of that landscape. I can start with some points at a general level which were either not disputed or accepted, before moving onto more controversial points.
274. Mr Brismark said that the general situation about 20 years ago was one where implementers and patentees alike generally had a willingness to negotiate a SEP licence agreement, understanding that a deal had clear benefits compared to litigation. By contrast he said that today (and over the past 5-10+ years) there were many more disputes. Mr Brismark ascribed the cause to implementers engaging ‘much more frequently’ in hold-out. Mr Djavaheerian disagreed and I return to this point later. But the general picture of more disputes is also confirmed by our experience in the Patents Court.
275. It is not necessary for me to relate in any detail the general stages of a licensing negotiation as related by the experts – Initial Contact, Technical Negotiations, Business Negotiations, backed up, much as a last resort by recourse to litigation or (much less frequently) arbitration.
276. Where agreements are reached, Mr Brismark indicated they were generally for a term between 5-7 years to allow for adjustment on renewal due to changes in the SEP portfolio structure and strength and the position of the implementer in the market in the meantime. Other general features of the landscape can be summarised as follows:
- i) Licensors have to be flexible to get negotiated deals. This is reflected in the high degree of variation in InterDigital’s licences. I discuss this notion of flexibility in further detail below.
 - ii) The larger implementers favour lump sum deals. Those deals require some forecast of sales so that the licensor can value the agreement and determine an appropriate lump sum.
 - iii) The advantage to a licensor of a lump sum agreement is economic certainty; the licensor will receive the stated sums on the stated dates regardless of the sales performance of the implementer. Depending on how the payments are structured, a LS deal also gives the licensor the opportunity to offer a discount based on Net Present Value calculations, due to the accelerated receipt of royalties.
 - iv) Smaller licensees and/or those with an uncertain outlook or less bargaining power are likely to favour a running royalty agreement.
277. No discussion of SEP licensing can be complete without discussion of the concepts of ‘hold-up’ by a SEP licensor or ‘hold-out’ by an implementer who

requires a SEP licence. I have already discussed what I found to be Mr Brismark's unusual definition of 'hold-up'. In general, I adopt the same definitions as Birss J. in *UPHC* (see above), which I believe to be the standard meanings of each term.

278. There is one general observation to be made about these terms. Every SEP licensing negotiation involves some degree of hold-up or hold-out (and probably both) for as long as the two sides fail to reach agreement. It depends on the eye of the beholder as to which is occurring. However, the mere failure to reach agreement does not necessarily mean that one side or the other is to blame – there may be a genuine disagreement as to the value to be attributed to a particular SEP portfolio and what terms are FRAND, which can only be determined by an independent tribunal.
279. I return to the notion of flexibility in SEP licensing. Mr Brismark discussed the various possible licence structures in his first report in paragraph 67 and continued as follows:

'68 In my experience, in SEP licensing negotiations, it is quite common that a licensor will start by providing a term sheet offer based on a percentage running royalty, with floors and caps. This will give the licensee a very good understanding upfront of the economics of a deal. Having said this, in most negotiations the licensor will be asked to make offers in all of the structures discussed above as part of the negotiation. In the end, it is my experience that as a licensor you will need to show a great deal of flexibility on deal structure in order to get a negotiated deal in place.'

280. Mr Brismark made a similar point in his paragraph 75. Mr Djavaheerian detected, in these passages, that Mr Brismark was suggesting that deal structure was more important than price. I am not sure that he was, but Mr Djavaheerian was at pains to stress that the price is the key metric about which all the negotiations will centre.
281. Mr Brismark's paragraph 68 does require a little unpacking. An offer based on a percentage running royalty gives the licensee a very good understanding of what the SEP licensor is demanding in its opening bid: this may or may not be at the licensor's 'program rates'. For smaller implementers, it may well be: for the larger players in the market, I suspect the licensor does not put forward its 'program rates'. From that point on, the flexibility used to structure the final licence terms can serve to and often does obscure the overall economics of the deal. I acknowledge entirely that the introduction of this 'flexibility' comes about because each side is seeking to represent its own interests.
282. In his first report, Mr Djavaheerian suggested that sophisticated licensees frequently reach agreements on rates far from the SEP licensor's announced or 'program rates'. Mr Djavaheerian returned to this topic in his second report, developing it further in some particular observations concerning flexibility, a SEP licensor's 'program rates', and what is ultimately agreed:

2.24 Mr Brismark claims (paragraph 67 of Brismark 1) that "*The most straight forward royalty structure is to have, per licensed standard, a blended global running royalty rate in percentage, with floors and caps*". This might have been Ericsson's preferred structure, but I do not agree that this is necessarily the "*most straight forward royalty structure*." For example, a single flat rate would be simpler, as would a single lump sum payment (which would also require no further auditing in the license term). [fn 7].

2.25 Very commonly, major undertakings are not able to agree on a structure such as set out by Mr Brismark in paragraph 67; instead both parties frequently prefer a lump sum arrangement. In my experience, when licensors move away from what they consider to be their preferred "standard" terms (e.g ., the royalty structure referred to in Brismark 1), they often seek to introduce ambiguity regarding the rate actually being paid, or some other element of complexity or caveat to the overall deal, as a way of attempting to mitigate the risk (from their perspective) of that "non-standard" license setting a precedent for other potential licensees to follow. A change of license structure (e.g. to a lump sum or other structure, or combination of structures) often forms part of such tactics.

2.26 In particular, it is in the licensor's interest to seek to cultivate their collection of license agreements in such a way as to support the proposition that there exists (for any given point in time) a "standard" set of licensing rates which have been consistently applied and agreed to across the set of agreements, notwithstanding variability in the royalty structure, actual amounts paid and effective rates between licenses.

2.27 In order to perpetuate the perception of the existence of a standard "program rate", licensors sometimes seek to enter into a large number of simple licenses featuring a running royalty rate set at a high level at or around the alleged "program rate". In practice, these will typically be with less legally experienced or sophisticated and/or smaller-volume licensees for whom the total royalty to be paid under the license will not add up to a very high overall sum (and may be anticipated to come in below or near the cost of litigation to the licensee, as I described in paragraphs 5.9 and 6.6(b) of Djavaheerian 1), and who will be relatively more inclined to simply accept royalty terms at or around the licensor's intended "program rate" and less motivated to negotiate rigorously to a lower rate. The account of InterDigital's initial negotiation with Wistron in relation to its 2012 license given at paragraph 64 of the First Witness Statement of Julia Mattis appears to be an example of such a license.

2.28 On the other hand, where a licensee is not prepared to accept the licensor's alleged "program rates" and negotiates vigorously and in good faith to agree on royalty terms amounting to a significantly lower effective rate, in order to maintain the perception that a standard "program rate" exists and is consistently applied, in addition to generally resisting disclosure of the terms of their other licenses to any potential licensee, a licensor may commonly attempt to limit the precedential value of licenses agreed at a lower effective rate by drafting and structuring such licenses in a complex way that may be more difficult to unpack (even if it were to be disclosed, e.g. in the context of litigation) and such that arguments can be made that the rates therein are in some way equivalent to, or consistent with, the licensor's alleged (higher) standard "program rate". Similarly certain recitals or clauses might be included in the license as 'reasoning' for a certain (higher) rate. Again, I do not consider these to move the dial. Once the operative terms of the agreement have been reached it often is in both parties' interests to make the license rate appear higher or more difficult to understand (see *Djavaherian 1* at paragraphs 5.19(b) and 6.33).

2.29 In this regard, and as set at paragraph 2.21 above, Mr Brismark's evidence gives the impression that there is no room to negotiate on price. It is simply not the case, however, that a patentee is given free rein to unilaterally set a price for all licensees (and with little or no negotiation). The notion that those unilateral rates must then be accepted without question by licensees (and ultimately by reviewing courts) would lead to an unjustifiable approach in which there is no "check" on FRAND compliance beyond what a patent holder might unilaterally demand. Some licensors have been resistant to the idea that their licensing practices should be under any kind of external scrutiny (such as court or antitrust authority control) and wish to have free rein as to the terms they impose, keeping individual terms confidential. In my experience, potential licensees can place great weight on the decisions of courts and competition authorities as this is often the best evidence available to them as to what is reasonable for any given portfolio. As noted above, even a small sampling of relevant public court decisions demonstrates that licensor stated rates often are overstated.

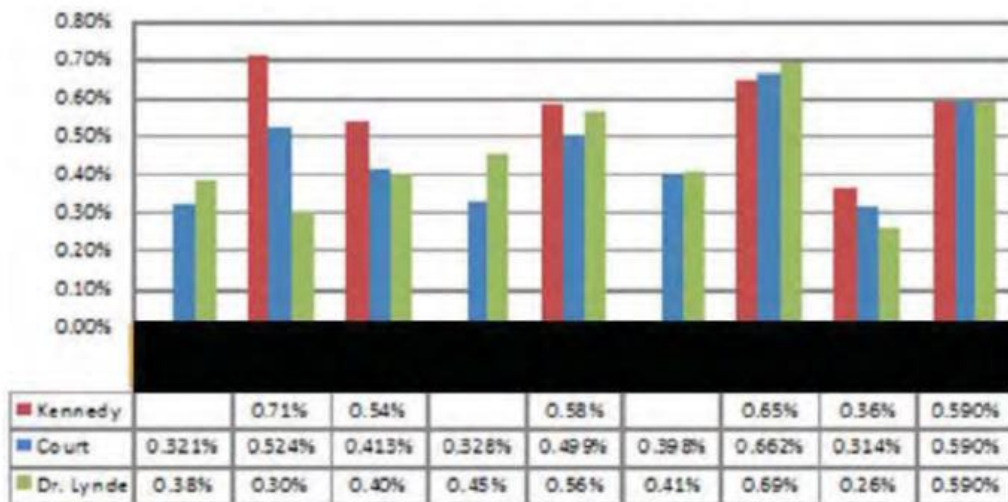
2.30 The fact that parties can and do negotiate extensively on price is clear by reference to the different unpacked effective rates which were **actually** [emphasis in the original] paid by different companies, as set forth in the report of Mr Meyer (in contrast to the nominal "undiscounted" rates calculated by Mr Bezant, which are predicated on the acceptance of (a) InterDigital's position in relation to the existence of a standard "program rate"; (b) the legitimacy of characterizing any (lower) deviation from such rates as a "discount"; and (c) the

appropriateness of reversing any "discounts" in an unpacking exercise to seek out and arrive at a nominal undiscounted "program rate"). Similarly, the degree to which parties in real-world negotiations negotiate on price can be observed with respect to Ericsson's own licensing program, in relation to which Ericsson made the following announcement in 2009 concerning its stated rates for 4G

"Ericsson expects to hold a relative patent strength of 20-25% of all standard essential IPR. Ericsson believes the market will drive all players to act in accordance with these principles and to a reasonable maximum aggregate royalty level of 6-8% for handsets. Ericsson's fair royalty rate for LTE is therefore expected to be around 1.5% for handsets."

2.31 Although Ericsson said it hoped to achieve a royalty of 1.5% for handsets, the unpacked rates for licenses reviewed in the TCL v Ericsson decision showed Ericsson in fact achieving licensing rates of between 0.31% and 0.66% as assessed by the Court and as shown in the graph below:

Figure 1: Unpackings of Ericsson's achieved license rates from Ericsson's expert (red), TCL's expert (green) and the Court (blue).⁹



2.32 This clearly demonstrates that negotiation on price does, in fact, occur. Further, these negotiations can be complex and time-consuming. The market did not arrive at the royalty terms unilaterally sought by Ericsson but arrived at very different (and significantly lower) royalty terms, as did the reviewing authority in that case (the US court when the royalty terms were put up for independent analysis).

283. The cross-examination of Mr Djavaheerian did not reveal whether he had formed those views before his involvement in this case or because of it. It does not matter which because I found his views particularly apposite as regards

InterDigital's licensing practices. I emphasise that I do not blame InterDigital for developing these practices – they are a natural reaction to having to operate in a difficult licensing environment.

284. However, based partly on the evidence from Mr Brismark and Mr Djavaherian, partly on the evidence of fact from InterDigital as to how its licensing practices have developed, partly on the expert accountancy evidence and partly on my conclusions below as to what is FRAND, I have come to the conclusion that InterDigital's SEP licensing practices (and, I strongly suspect, of others in the same market) have become distorted by their attempts to secure licences of their SEP technology, against a picture of many (but not all) implementers not complying with their duty to act as a willing licensee.
285. I should add that Mr Brismark, in his second report, identified a counter-example from *HTC v Ericsson* 6:18-CV-00243-JRG (E.D. Tex. Dec 17, 2018), in which he said that the court determined that Ericsson's offered 1% royalty per LTE phone with a \$1 floor and \$4 cap was in line with comparable agreements (this part of the decision being affirmed on appeal: 19-40566, 5th Cir. Aug. 31, 2021). Mr Brismark commented that, given the general decline in licensing rates over the years, the adjudicated rate is fairly consistent with Ericsson's announced LTE rate of 1.5% about 10 years earlier.
286. Finally, under this heading, there were some interesting discrete points made by the licensing experts which I must discuss.
287. First is Mr Brismark's point (just mentioned) about the general decline in licensing rates over the years. In both his first and second reports he said that there had been a general erosion of royalty rates 'over the past 10 years, largely due to systematic hold-out by implementers'. It is clear that Mr Djavaherian did not agree, for several reasons:
- i) First, he referred to a series of court decisions (*Microsoft v. Motorola*, *Unwired Planet v Huawei*, *Huawei v Conversant*, and *Innovatio v. Cisco et al.*), where he said the rates determined to be FRAND by the court were well below the rates that had been sought in the private negotiations.
 - ii) Second, he made the point that for the larger licences, the unpacked rate is more likely to be attributable to the value of the underlying patents and less likely to reflect other factors such as the desire to avoid the costs of litigation or avoid protracted negotiation.
288. More generally, when the sums payable by the larger implementers (often lump sum deals) are at least a degree of magnitude higher than the costs of litigation, it seems logical to assume that the unpacked rate is more likely to represent the 'true value' of the licensed technology. By contrast, where the costs of litigation would be around or greater than the total sum payable under a licence, it is far more likely that the implementer has little choice but to accept what the licensor is demanding. Certainly, InterDigital's licences seem to fit this logic.

289. The second point is Mr Brismark's suggestion that high-end devices should command a higher absolute royalty than a low-end device utilising the same technology. He sought to justify this in the following passage which concludes with his suggestion as to how this is often reflected in practice:

"71 ... The value that, for example, the LTE technology brings to a high-end smartphone with the latest camera technology and a large high-performance screen etc. is higher than the value LTE brings in a low-end device with less performance, a smaller screen etc. In the high-end smartphone, the LTE technology is more utilized since the phone will require higher speed and lower latency when communicating over the wireless network. Therefore, a higher royalty in the absolute is justified, whereas for a low-end device a lower royalty is justified. This is reflected in a royalty which is based on a percentage of the ASP. A percentage based running royalty combined with a floor and/or a cap is used as the standard structure by many licensors in industry and provides for the above mentioned effect, while still achieving a minimum absolute royalty amount and a maximum royalty amount.

72 In negotiations an implementer with predominantly high-end phones would typically argue that it should pay no more than the absolute amount (i.e. in dollars, euros or any currency agreed) the implementer with the lowest ASP on the market pays, thereby effectively asking to pay a much lower percentage royalty compared to its competitors. An implementer with low-end phones will, conversely, normally ask to pay no more than the *percentage* royalty of the implementer with the highest ASP on the market, while ignoring that there is an ASP cap in doing so and effectively asking to pay a much lower absolute amount per phone than its competitors. These are extreme positions to take and, in my experience, could be a sign of hold-out if insisted upon by a licensee.

73 However, as a general rule, companies with high ASP phones will prefer a structure with an absolute amount per device when negotiating, or at least insist on a cap. Conversely, companies with low ASP phones will prefer a straight percentage structure, without floor (for a low ASP player, the cap plays no role).

74 An effective way of striking a balance is to use a royalty based on a percentage of the ASP, but with caps and floors. This provides a relationship between the royalty paid and the price (and use of the standardized technology). At the same time the floor protects the licensor against business models which may have artificially low prices on a device, whereas the cap protects the licensee in instances where a phone is priced higher than the value the standardized technology enables [fn: To take an extreme example, if the phone is gold-plated for example]."

290. The subsidiary point concerns caps and floors. Mr Djavaherian touched on the issue of caps and floors in his paragraph 2.24 which I quoted above. In his footnote 7, he set out two observations made by Judge Selna in *TCL v Ericsson* (which I quoted in paragraphs 267 and 268 above).
291. The principal point is whether higher-end devices should bear a higher absolute royalty. If they do, in one sense, the result can be characterised as the higher-end devices subsidising lower end devices. Mr Brismark seeks to justify this point on the basis that in higher-end devices, the technology is ‘more utilised’. For myself, I have never encountered the suggestion before that the royalty in SEP licensing of mobile devices should depend on *usage*. SEP licensing is complicated (and therefore opaque) enough without the introduction of an assessment of usage (which would necessarily have to be of individual technologies). I have not been able to detect any hint in the ETSI materials that usage of individual devices should be taken into account. Rather, my understanding is that the royalty on a 4G/LTE phone, for example, is paid because of the *potential* of that device to utilise the technology. The same royalty is payable whether the device is very heavily used over mobile networks, or data is predominantly conveyed over Wi-Fi networks, or the device is put in a drawer and never used. Furthermore, there was no suggestion either that sums paid or payable under any of the allegedly comparable licences depended on usage.
292. In relation to Mr Brismark’s point therefore, I am inclined to view it as yet another creative justification put forward from the SEP licensor viewpoint to justify a higher royalty. I therefore leave it out of account.

UNPACKING OF THE ALLEGEDLY COMPARABLE LICENCES

293. As will appear from the next two sections, Messrs Bezant and Meyer approached the process of unpacking and comparison in radically different ways. It is necessary to set out a reasonably lengthy explanation of their respective approaches in order to understand the issues which arose.
294. In addition to their adoption of different approaches, the two experts used different data in a number of respects. By way of example, for handset sales data, Mr Meyer used data from IDC, whereas Mr Bezant used data from SA. Although Mr Bezant said the data were ‘similar’, eventually InterDigital agreed that I should use IDC data. Notwithstanding that, it will be seen that the experts frequently arrived at and utilised radically different figures for total consideration and total unit sales for certain PLAs. The combination of the different approaches and the use of different data sources meant that comparisons were, at best, difficult to make.

THE INTERDIGITAL/BEZANT APPROACH TO UNPACKING AND COMPARISON

295. Due to the uncertainties in unpacking, InterDigital submitted that it is better to look across as broad a range of comparables as possible rather than focussing on a small subset of ‘the best’ comparables. They say doing so mitigates against

the uncertainty inherent in any particular, single comparable licence skewing the analysis.

296. This approach was very much evident in Mr Bezant's reports. Indeed, in his second report, he was explicit:

'Mr Meyer relies on a small number of comparable licences, which reduces the reliability of his analysis

2.2 As explained in my First Report, a comparables analysis uses the effective rates implied by commercially negotiated licences, for the same or a similar set of rights to those in the subject licence, as a guide to the market value of those rights. The implied rates must be interpreted with care as there may be issues of reliability (in their calculation) or comparability (to the subject licensee).

2.3 Whilst certain differences in characteristics between licences can be adjusted for (e.g. the time value of money), the impact of other characteristics (such as a licensee's market position or differences in the underlying circumstances of the licence negotiations) are not always directly observable or quantifiable.

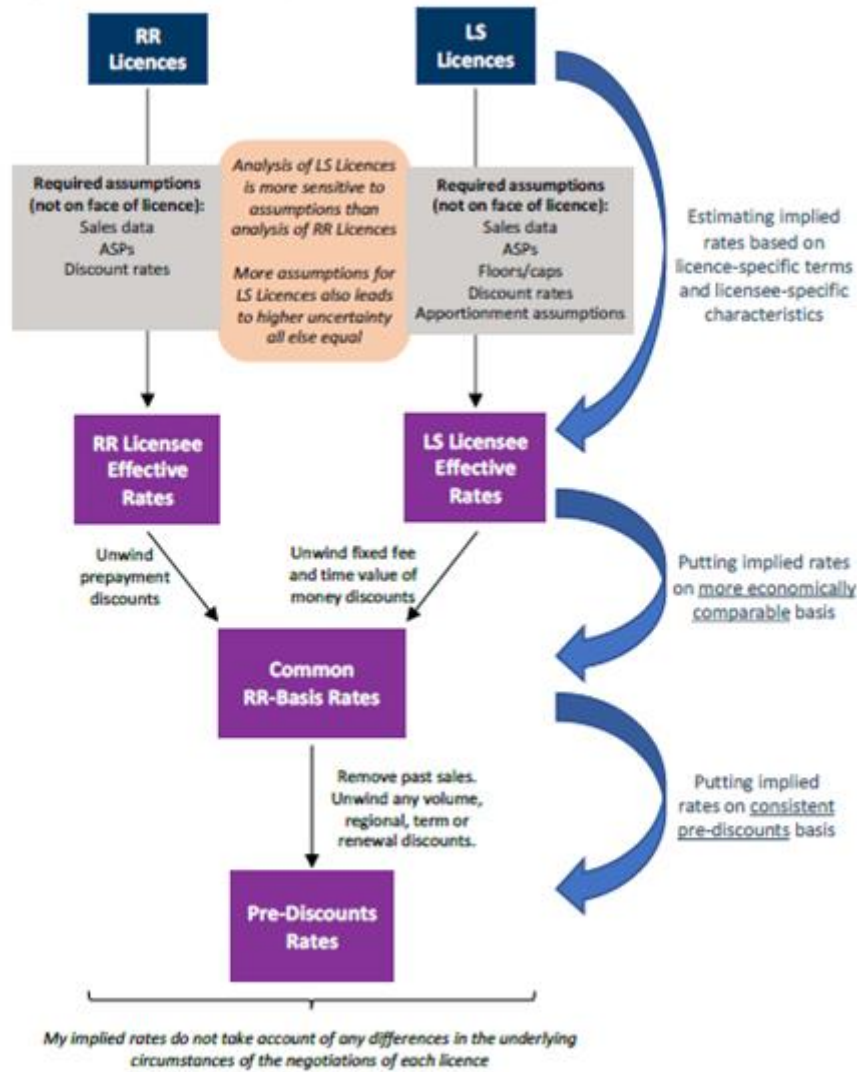
2.4 I therefore consider it preferable to rely on more rather than fewer comparables and to consider what those datapoints imply (in terms of the value of the rights), in the round, taking account of both factors that can, to some extent, be adjusted for and those that cannot. This reduces the likelihood of reaching an incorrect conclusion based on a small number of datapoints that may be affected by unobservable factors (that have not therefore been adjusted for) or uncertainty in respect of the appropriate assumptions.'

297. Mr Bezant analysed all 27 licences relied upon by the parties (as well as others) and set out his opinion as to what can be derived from each one, pointing out the factors which, in his view, affected the reliability of each particular licence as a comparable.
298. There is one important point to note which Mr Bezant mentioned at the start of his first report. He was informed by InterDigital's solicitors that InterDigital's case as to the value of its portfolio of 3G, 4G and 5G SEPs is primarily based on 20 running royalty licence agreements entered into by InterDigital over time. The only possible inference is that these 20 PLAs were the InterDigital 20.
299. Mr Bezant was instructed to analyse the financial terms of each of the pleaded PLAs, including the 3GMM, 4GMM and 5GMM royalty rates implied in those licences. As I understand matters, this instruction was driven by the structure of InterDigital's 5G Extended Offer, and there are some important points to note:

- i) First, in that offer, *ad valorem* rates are offered for each generation of technology. This instruction gave rise to considerable complication in Mr Bezant's analysis in that he had to determine rates (and sometimes a range) for each of 3G, 4G and 5G, having estimated Average Selling Prices (ASPs) for 3G and 5G and using historical data for 4G.
 - ii) Second, as stated in this offer, royalties would be paid, by generation, at the same rate for the past as for the future.
 - iii) Third, in his analysis Mr Bezant presented both *ad valorem* rates and \$/unit rates.
300. Mr Bezant also developed a particular approach which he said was designed to put licences which encompass differing scopes and consideration onto common bases for comparison.
- i) First, he derived for each licence the "Licensee Effective Rate" or "**LER**". Mr Bezant explained that this is the rate implied by the licence, incorporating: (i) all licence-specific terms, such as floors/caps, prepayments, term, regional and volume discounts, lump sum payments and payments for past release; and (ii) the characteristics of the specific licensee such as forecast sales volumes and ASPs. InterDigital suggested that this was the most basic level of unpacking that does not seek to normalise for any payment structure related discounts or licensee specific discounts that have been applied in the licence.
 - ii) Second, Mr Bezant derived what he called the "Common RR-Basis Rate" or "**CBR**". He explained that this is the rate implied by the licence, before payment structure-related discounts (such as fixed fee and time value of money discounts) are taken into account. In other words, InterDigital submitted, this level of unpacking seeks to back out the rate that is implied if the effect of any applicable payment structure-related discounts is disapplied. Mr Bezant said this means that the rates from licences with different payment structures are placed on a more economically comparable basis.
 - iii) Third, Mr Bezant derived the "Pre-Discount Rate" or "**PDR**", being the rate implied by the licence, before all other discounts that were given (based on InterDigital's fact disclosure and witness evidence) are taken into account. InterDigital submitted that this level of unpacking seeks to back out the rate that is implied if the effect of any other discounts, particularly licensee specific discounts, is disapplied. Mr Bezant was keen to stress that no-one actually pays the PDR – these are rates derived for the purposes of comparison only. To derive an actual rate for any particular licence, one takes the PDR and then adds in all the discounts to which the particular licensee is entitled.
301. Mr Bezant summarised his approach in the Figure set out below. There are many features of his approach which I will have to discuss below, but particular points to notice are:

- i) His clear preference for RR licences over LS licences. This might imply a preference for *ad valorem* rates over \$/unit rates, but I did not detect such a preference being expressed by Mr Bezant.
- ii) The steps taken to calculate the PDR. Any ‘licensee-specific’ discounts (volume, regional, term and renewal) are unwound at this point but only after past sales have been removed. In other words, the PDR is a ‘future only’ rate.

Figure 5-1: Illustration of my approach to estimating the implied rates



- 302. Again, it is important to appreciate that Mr Bezant’s approach required him to calculate LERs, CBRs and PDRs for each of 3G, 4G and 5G.
- 303. Having calculated the CBR for each of the 27 PLAs (in some cases presenting a range), Mr Bezant then presented comparisons of the per unit CBRs and *ad valorem* CBRs implied by InterDigital’s 5G Extended Offer and Lenovo’s pleaded case to four ranges of comparable PLA. The ranges chosen by him were:

- i) The first embraced all licences that include an implied rate for the given standard.
 - ii) The second range was based on range 1, from which licences which Mr Bezant considered to be less reliable comparables were excluded.
 - iii) The third embraced all RR and hybrid RR licences that include an implied rate for the given standard. He suggested that his estimated rates for these licences are more reliable than for LS and Hybrid LS licences.
 - iv) The fourth was based on the third, but again from which licences which Mr Bezant considered to be less reliable comparables were excluded.
304. Lenovo cross-examined Mr Bezant on the basis that, as one descended through these ranges, one got to the group of PLAs which he most favoured. He rejected this on the basis that ranges 3 and 4 were independent of ranges 1 and 2. There was, however, some truth in the suggestion because the consequence of Mr Bezant definitely favouring RR over LS PLAs and his exclusion of PLAs which he considered less reliable meant his results for range 4 were his preferred results.
305. This raises an issue as to precisely what opinions Mr Bezant was expressing when he commented on the *reliability* of results derived from a particular PLA, and the same goes for Mr Meyer. Although this was not spelled out explicitly, there is a distinction to be recognised between (1) an expert expressing the view that a single PLA or a particular group of PLAs are the best comparable(s) and (2) an expert expressing the view that the rates derived from a particular PLA or group of PLAs are more *reliable* based purely on the expert's assessment of the uncertainties and difficulties involved in unpacking the PLA(s) in question. I understood Mr Bezant's opinions on reliability to sit in the latter category. Specifically, I did not understand Mr Bezant to be offering any opinion as to which PLA or group of PLAs were the best comparable(s) in this case. By contrast, Mr Meyer was clearly expressing views in the former category. The difference in their approaches does not matter overmuch, because it is the reasons for their opinions which matter.
306. However, there is one important consequence for InterDigital's case which I must note. None of InterDigital's fact witnesses expressed any view about the InterDigital 20 and, as I have just explained, Mr Bezant did not do so either, nor did any other expert witness called by InterDigital. Although InterDigital's FRAND Statement of Case was signed by a Mr Akerley, identified as Vice-President, Head of Litigation, he was neither asked to give evidence nor did Lenovo request to cross-examine him. Lenovo did not need to, because it was InterDigital's choice as to what evidence to adduce in support of their case or in opposition to Lenovo's case.
307. The somewhat surprising result is that there was no explicit support for InterDigital's case based on its 20 pleaded comparables, apart, of course, from the analysis of those PLAs.

308. Reverting to the presentation of results in Mr Bezant’s first report, he presented results on different bases, but here I set out his estimates of the per unit CBRs and then of the per unit PDRs for 4G.

Table 2-1: My estimates of the per unit Common RR-Basis Rates, \$/unit

Licences/Offer	3GMM	4GMM	5GMM
IDG’s 5G Extended Offer	0.35	0.63	1.05
Lenovo’s Pleaded Case	nil	0.02	0.07
(1) All	0.03-2.00	0.15-3.90	0.44-2.62
(2) All (more reliable)	0.10-2.00	0.41-3.00	N/A
(3) RR and Hybrid (RR)	0.12-2.00	0.29-3.90	N/A
(4) RR and Hybrid (RR) (more reliable)	0.44-2.00	0.65-3.00	N/A

Note: I am not able to estimate the 5GMM Common RR-Basis Rates for any LS licences that I consider to be more reliable or for any RR and Hybrid (RR) Licences. Sources: Appendix 12: FTI Analysis, ‘5G Extended Offer’, ‘Lenovo’s Pleaded Case’, and ‘Implied rates (per unit)’ tabs.

Table 2-3: My estimates of the per unit Pre-Discounts Rates, \$/unit

Licences/Offer	3GMM	4GMM	5GMM
IDG’s 5G Extended Offer	0.39	0.72	1.20
Lenovo’s Pleaded Case	N/A	0.12	0.12
(1) All	0.15-2.00	0.30-3.90	1.11-4.18
(2) All (more reliable)	0.44-2.00	0.65-3.00	N/A
(3) RR and Hybrid (RR)	0.16-2.00	0.30-3.90	N/A
(4) RR and Hybrid (RR) (more reliable)	0.44-2.00	0.65-3.00	N/A

Notes: (1) I am unable to calculate the 3GMM Pre-Discounts Rates for Lenovo’s Pleaded Case, because there are no 3GMM sales during the term of the licence; and (2) I am not able to estimate the 5GMM Common RR-Basis Rates for any LS licences that I consider to be more reliable or for any RR and Hybrid (RR) Licences. Sources: Appendix 12: FTI Analysis, ‘5G Extended Offer’, ‘Lenovo’s Pleaded Case’, and ‘Implied rates (per unit)’ tabs.

309. As appears from these two tables, all of the ranges presented are wide. It is striking, however, that Mr Bezant’s stated PDR ranges are effectively the same if one takes ranges 1 and 3 or identical for ranges 2 and 4. In other words, he managed to derive the same rates from all the PLAs relied upon and from just the RR PLAs.
310. The values set out in Tables 2-1 and 2-3 were revised slightly in Mr Bezant’s second report, but were set out by generation. The 4G CBR rate from the 5G Extended Offer reduced slightly to \$0.61, and the 4G PDR reduced to \$0.71 but the other 4G values were essentially unchanged.
311. Then Mr Bezant presented a series of plots showing his calculated LERs, CBRs and PDRs for both a per-unit rate \$/unit and *ad valorem* rate as a % of limited

ASP for each of 4GMM, 3GMM and 5GMM. These plots were revised and updated (adding Xiaomi 2021) in his second report, where Mr Bezant explained that he presented these plots in the order of 4G, 3G and 5G because of their value in InterDigital's 5G Extended Offer: 64% of the forecasted PV adjusted consideration related to 4GMM sales, 24% to 3GMM and 12% to 5GMM sales.

312. It is not necessary for me to set out each of these plots. I will set out the corrected 4G LER, CBR and PDR plots and make some observations.

[REDACTED]

REDACTED]

313. One important point to note about all Mr Bezant's plots of this type is that they give equal weight to each PLA. I have to consider the issue of weighting further below.
314. In its Opening Skeleton, InterDigital referred to aggregated versions of these plots and submitted they enabled the Court to see the total spread of the data

and how it relates to the parties' offers. Reliance was then placed on Mr Bezant's conclusions in his first report, expressed as follows:

- a. 'The per unit Common RR-Basis Rates implied by InterDigital's 5G Extended Offer sit in the bottom half of the range of Common RR-Basis Rates implied by InterDigital's comparable licences for 3GMM, 4GMM, and 5GMM. They also sit below the bottom of the range of rates implied by the RR and Hybrid (RR) Licences, that Mr Bezant considers to be more reliable, for 3GMM and 4GMM; and
 - b. The per unit Pre-Discounts Rates implied by IDG's 5G Extended Offer sit in the bottom half of the range of Pre-Discounts Rates implied by InterDigital's comparable licences for 3GMM, 4GMM, and 5GMM. They also sit just above the bottom of the range of rates implied by the RR and Hybrid (RR) Licences that he considers to be more reliable for 4GMM, and they sit below the bottom of the range of rates implied by the RR and Hybrid (RR) Licences that he considers to be more reliable for 3GMM.'
315. Although I am inclined to agree these conclusions are applicable to the plots (if one notionally draws in the upper and lower bounds), in fact these conclusions were stated by Mr Bezant underneath his tables 2-1 and 2-3 respectively. In other words, the ranges to which Mr Bezant was referring in those paragraphs were the very wide ranges set out in those tables.
316. Although this was not made explicit, I think the point being made was that, because InterDigital's 5G Extended Offer sat in the CBRs or the PDRs range, it was therefore FRAND. The point that the Offer sat in *the bottom half or below the bottom* of the specified ranges carried an implicit suggestion that the Offer was therefore 'conservative'.
317. Whilst I agree, as it was made clear in *UPCA* that a range of rates may be FRAND, I regard the ranges set out in Mr Bezant's tables as far too wide to represent the FRAND range in this case. Taking 4G as the prime example, Mr Bezant's preferred range was \$0.65-\$3.00. Any endorsement of ranges of that type of width would, in my view, provide a licence for discrimination and would positively hinder the endeavour to converge on FRAND rates which the industry can use. Accordingly, in my view, the task of the Court is to arrive at a much more precise range or even a single rate. A separate point is whether the Court should arrive at a single rate blended across generations or a single rate per generation.
318. To my mind, however, a much more relevant point appears from these plots. First, it must be noted that the PLAs are shown along the X-axis in date order. These plots show significant variation in rates. However, if I concentrate first on the RR or Hybrid (RR) points (dark blue squares) LERs, subject to certain outliers, a best-fit line would be angled downwards from \$[RED] on the y-axis down to about \$[RED] at the right-hand side. By contrast, the data points for the LS licences (green spots) have a much lower rate of decline, but a decline

over time nonetheless – more easily seen if the y-axis scale were to be expanded. Mr Bezant’s PDR plot is more difficult to interpret, but one can still discern a decline in his PDR rates over time. Although I am not, at this stage, accepting that Mr Bezant’s analysis is valid, nonetheless, these trends are noticeable. The consequence of this trend is that the rate indicated in an InterDigital PLA is sensitive to the date when each was concluded. Since I consider it would be contrary to principle to reward Lenovo for delay (whether the delay is Lenovo’s fault or not), but also because my task is to arrive at a FRAND rate or rates, this is a point I keep in mind.

319. These trends are also apparent when one examines the per-unit rates set out in CXX-PM-3&4. For those PLAs where a 4G rate can be derived, Mr Bezant’s PDRs are as follows for each group of licences:

- i) For the InterDigital 20 there are 14 values which in date order are: [REDACTED], the average of which is \$1.76.
- ii) For the Lenovo 7 there are 7 values, of which 2 are ranges [REDACTED] and [REDACTED]. For convenience, I take the mid-point of each of the ranges viz: [RED] and [RED]. Then the values over time are: [REDACTED], the average of which is \$1.57.

320. When making any analysis of Mr Bezant’s PDRs, I remain acutely conscious of the process used to derive each PDR and Lenovo’s criticisms of it. Lenovo’s favourite example is taken from Samsung 2014. The rates derived by each expert for that PLA were as follows:

- i) Mr Meyer’s future only rate (blending 3G and 4G) was \$0.16 (Mr Meyer proceeded on the basis that the PLA covered no past sales).
- ii) Mr Bezant’s rates were:
 - a) 3G, LER: \$[RED]. PDR: \$[RED].
 - b) 4G, LER: \$[RED]. PDR: \$[RED].

321. Although there is an enormous difference between, for example, rates of \$[RED] and \$[RED] per unit, Lenovo emphasised the difference by drawing attention to the consequences of InterDigital’s case regarding Samsung 2014. Mr Bezant worked on the basis that Samsung paid a total of \$[RED]m pursuant to Samsung 2014, a price approximately 85% of the total applying Mr Bezant’s PDRs. Mr Meyer characterised Mr Bezant’s PDRs as representing what Mr Bezant considered to be the true value of the licence rights. This was largely, but not completely, fair. Mr Bezant was at pains to point out that no-one actually paid his PDRs – this was true so far as any of the Lenovo 7 were concerned, but not correct generally. Some of the smaller licensees did pay the rates which InterDigital demanded, without negotiation or any discount.

322. However, the general picture presented by Mr Meyer was correct. Samsung paid some \$[RED]m but the discounts accounted for \$[RED]bn (on the basis of

the unrealistic assumption made by Mr Bezant that Samsung would terminate early) or \$[RED]bn (on the more realistic assumption of no early termination).

323. Having touched on one criticism of Mr Bezant's approach, I can now turn to explain the principal criticisms levelled against it.

MR MEYER'S CRITICISMS OF MR BEZANT'S APPROACH

324. In summary, the principal criticisms concerned:

- i) Mr Bezant's reliance on InterDigital's own unit projections rather than third party market data.
- ii) The fact that Mr Bezant ignored releases of past sales.
- iii) Mr Bezant assigned no value to non-cellular technologies licensed under the LS PLAs, specifically HEVC and Wi-Fi.
- iv) Mr Bezant excluded non-handset sales (i.e. tablets, computers and other cellular devices) on the assumption they were not 'material'.
- v) The use of prepayment and time value of money discounts which were never paid to increase the calculated CBRs.
- vi) The use of volume and other discounts never paid to increase the calculated PDRs.

325. Points i), iii) and iv) are all concerned with what data to use, and I address these below. Each of points ii), v) and vi) raise important points of principle concerned with the appropriate methodology used in unpacking comparable PLAs. Of these points of principle, the application of discounts by Mr Bezant was by far the most controversial issue.

326. Mr Meyer explained his principal objection to Mr Bezant's approach in the following passages:

'... Mr. Bezant's analysis relies on the assumption that a valuation unpacking of comparable licenses should in effect "restore" revenue and value for the licensor that was not actually realized in the transaction, and which the licensor considers was forgone as a "discount", in order to arrive at an assumed market value. The goal of a market comparables valuation approach is to determine the value at which a particular transaction was actually realized in the market. Such an analysis indicates the actual realized value of the rights being licensed. A market comparables valuation analysis cannot be achieved by simply accepting one party's view that various comparable transactions were "discounted" and then grossing them up to an inflated rate that the licensor party would have preferred to achieve. Indeed, doing so simply measures what one party believes it should have received, rather than the actual market rates charged, and that it realized.

...The assumed discounts for which he adjusts include those related to: (1) past sales; (2) geographic scope; (3) license term; (4) sales volumes; and (5) previous licensing behavior. In situations where no further discounts other than payment structure-related discounts are said to have applied, the Pre-Discounts Rate is the same as the Common RR- Basis Rate. This is broadly the case for the InterDigital Comparable Agreements [i.e. the InterDigital 20].

However, when calculating the Pre-Discounts Rate for the InterDigital Lump Sum Agreements [i.e. the Lenovo 7], Mr. Bezant performs the following series of additional steps where he: (1) determines the consideration related to the future royalties by deducting the consideration relating to past sales (prior to the effective date) from the PV-adjusted total consideration; (2) uplifts the PV-adjusted future consideration to estimate the consideration before all discounts are taken into account; and (3) divides the PV-adjusted uplifted future consideration by the PV-adjusted future sales volume to obtain a per unit Pre-Discounts Rate. This complicated methodology strays from the core valuation exercise that seeks to understand how much is actually paid per device by other companies in the market that are comparable to Lenovo.'

327. I formed the view that in his reports, Mr Meyer was content to address the InterDigital discounts collectively, although he did single out volume discounts for particular criticism as I shall explain. This approach meant there was little attempt in his evidence to discriminate between the different discounts.

THE EFFECTS OF MR BEZANT'S TREATMENT OF PAST SALES

328. As will appear, the reason why Mr Bezant dealt with the past sales in the way that he did was because of two aspects of the 5G Extended Offer namely (i) the rate(s) applied to past sales were the same as those for future sales and (ii) many (but not all) of the discounts for which Lenovo qualified did not apply to past sales, although as the 5G Extended Offer indicates, the 5% term discount and the 5% regional sales mix discount apply equally to past and future rates (and are already embedded in the quoted royalty rates). These reasons explain, in part, why, in the expert evidence, the issue as to the appropriate treatment of past sales and the issues relating to discounts were rarely completely separated.
329. Much of Mr Meyer's response to Mr Bezant's approach was concerned with demonstrating the effects of it. All this material forms the backdrop to the findings I make later.
330. Out of the Lenovo 7, Mr Meyer proceeded on the basis that only 3 PLAs covered past sales: LG 2017, ZTE 2019 and Huawei 2020. Mr Meyer drew attention to the effect in Mr Bezant's analysis of removing the past sales to derive PDRs, in two tables in his second report. First, his Table 5 drew attention to the change in sales volumes if future only sales were considered:

Table 5: Summary of Bezant 1 PV-Adjusted Expected Sales Volume Under Licensee Effective Rate, Common RR-Basis Rate and Pre-Discounts Rate for LG, ZTE and Huawei (in millions)⁴⁵

	A	B	C	D = (C - A) / A
	Licensee Effective Rate (Past and Future)	Common RR-Basis Rate (Future Only)	Pre-Discounts Rate (Future Only)	Sales Volume Net Change
LG (2017)				-77.0%
ZTE (2019)				-95.4%
Huawei (2020)				-33.4%

331. Understandably, Mr Bezant's removal of past sales when calculating a PDR was a topic raised with him in cross-examination. First, the passage I quoted above from Judge Selna's opinion in *TCL v Ericsson* was put to him. Next, he agreed that Mr Meyer presented past and future rates plus a blended rate (of past and future). The contrast with his approach was then explored:

- 10 Q. By contrast, your pre-discount rates present hypothetical
11 future rates only; yes?
- 12 A. They provide the underlying rate after you have removed all
13 discounts, including past discounts.
- 14 Q. The reason you have removed all past sales from your
15 pre-discount rates we can see at page 90, behind tab 1. You
16 refer to the fact that InterDigital may have given lower rates
17 on past sales and the sixth line, you say, "IDG's 5G extended
18 offer requires payment by Lenovo on all past sales at the rate
19 stated in the offer. The implied rate from licences that are
20 not required to pay in full for past sales may therefore be
21 lower, all else equal, than the right that would be applicable
22 to an IDG-Lenovo licence." On this important issue, your
23 analysis has been driven, as I understand it, entirely by
24 InterDigital's decision as to what it wanted to offer to
25 Lenovo, i.e. a licence where the rate for the past was
2 identical and was not discounted at all; yes?
- 3 A. In order to be able to compare the rates I am calculating to
4 those in the two offers at the time, one proposition from IDG
5 was there should be no discount on the past and one
6 proposition from Lenovo was there should be 100% discount on
7 the past. So I calculated a rate that was consistent with no
8 discount on the past as a starting point.
- 9 Q. It is the only rate you present in the body of the reports, is
10 it not? Pre-discounts rate is just a future rate only; yes?
- 11 A. No, it is a pre-discounts rate, to the extent there are no
12 discounts attaching to the past. You can use that rate if you
13 then wanted to say its specific discount should apply to the
14 past. You can use it, to the extent you want to, and apply a
15 percentage or some other adjustment to it.
- 16 Q. Your approach removes a very large proportion of the licence
17 volumes for some of the licences; yes?

- 18 A. When I am unpacking some of the specific licences where past
19 discounts have been given, I remove both the consideration
20 that was assessed or agreed to relate to the past and the
21 volumes that relate to the past. So I am not just removing
22 the volumes, I am splitting the consideration and the volumes
23 into the past and the future.
- 24 Q. Yes, but you also say in your report, do you not, that rates
25 for the past tend to be lower?
- 2 A. Yes, because people have to give a discount. That is one of
3 the problems.
- 4 Q. Removing those sales, all else equal, will tend to increase
5 the implied rates materially?
- 6 A. If you are calculating a rate across the past and the future
7 and the past has a discount in it, then that blended or
8 overall rate will be lower. If you are separating the past
9 from the future because there is a particular discount
10 applying to the past, there will be different rates for the
11 past in the future.
- 12 Q. That is not what you are doing, is it? You split it into past
13 and future. You then take the future rate alone and on to
14 that future rate which, on your own analysis, is higher than
15 the past rate, you then load all of the assumed discounts,
16 yes, at both stages?
- 17 A. It depends on what the discounts relate to, because if the
18 discounts relate to the term of the licence, it is a five-year
19 licence or it is a lump sum, by reference to the effective
20 date of the term much the licence, so the discounts relate to
21 the term of the licence itself. There is an aggregate
22 discount, to the extent it applies, to the past sales. That
23 is why I do that.

332. In the middle of that answer, Mr Bezant referred to one proposition from InterDigital that there should be no discount on the past and one proposition from Lenovo that there should be a 100% discount on the past. The first derived from InterDigital's 5G Extended Offer, which specified that the same rate (per generation) applied to future sales as past sales. The second derived from Lenovo's pleaded case (summarised at paragraph 28 above). In fact, even in Lenovo's Opening Skeleton, Lenovo submitted that neither the US nor China make the FRAND licence terms dependent upon payment or settlement of the past global sales and suggested that, as a result, a willing licensor and willing licensee would be aware that any attempt at recovery for back sales would be independent of the FRAND terms (my emphasis). However, this position was not supported by Mr Meyer's analysis and, as far as I am concerned, seems to have been quietly forgotten about as the trial proceeded.
333. Mr Meyer's Table 5 (set out above) was put to Mr Bezant immediately after the passage quoted above, then Table 3 on p19 of Mr Meyer's second report (see further below). His response was as follows:

- 25 This
2 table – I will not read out any of the blue figures –
3 summarises how your volumes change when you exclude the past;
4 yes?

- 5 A. Yes, because they reflect it has taken ten years or so or
6 eight years to get to a deal and the deal you have managed to
7 agree is for a three-year period. Naturally, the past is a
8 much bigger set of volumes, all other things equal, than the
9 future. It is no more than that.
- 10 Q. You accept that following the logic of what Judge Selna says,
11 you accepted about the past sales being an integral part of
12 the economics of the licence agreement. What you end up with
13 is a skewed and misleading picture; yes?
- 14 A. No.
- 15 Q. We can see further the effect of removing the past if we go
16 back to page 416, please. This one particular licence, on
17 your analysis, between the licensee effective rate and the
18 pre-discounts rate, the sales volumes go down by 72.3%, the
19 total consideration goes up by 66% and, therefore, the
20 pre-discounts rate ends up 504% higher than your licensee
21 effective rate; yes?
- 22 A. This is the maths again, affected by the extent to which by
23 the time a licence has been agreed, and you are dealing with
24 questions of past release, relative to remaining future sales.
25 That may depend upon the period of the licence, it may depend
2 on whether the licensee's market share, for example, is
3 falling over time. So you have an imbalance between the past
4 and the future potentially. You have discounts on the past.
5 Yes, so when you unwrap a number of these things, there can be
6 a very big move between the very high discount you have given
7 on the bulk of your sales in the past, relative to the
8 pre-discount rate that applies to the future.
- 9 Q. I suggest to you that by the time you get to that 504%, that
10 is a figure that has left commercial reality behind long ago?
- 11 A. It reflects a number of things, but it may reflect the sheer
12 scale of the discount that you have to give in respect of the
13 past royalties.

334. On pages 18-20 of his second report, Mr Meyer had presented, using figures from Mr Bezant's first report, the effects of Mr Bezant's removal of the past sales on his future only CBRs and PDRs for [REDACTED].

335. Figure 3, on page 19, was the figure put to Mr Bezant. It looks like this:

Table 3: Illustration: Summary of Bezant 1 Licensee Effective Rate, Common RR-Basis Rate and Pre-Discounts Rate Per [REDACTED] (Upper End Rates)⁴⁰

	A	B	C	D	$E = (D - A) / A$
	Licensee Effective Rate (Past and Future)	Common RR-Basis Rate (Past and Future)	Common RR-Basis Rate (Future Only)	Pre-Discounts Rate (Future Only)	Net Change
PV-Adjusted Expected Sales Volumes (M)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	-72.3%
PV of Total Consideration (M)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	+66.0%
Implied Per Unit Rate	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	+504.1%

336. Mr Meyer described the steps undertaken in Mr Bezant’s approach as follows:

‘Below, **Table 3** provides a specific example of Mr. Bezant’s three-step analysis of the [REDACTED]. First, Mr. Bezant calculates [REDACTED] Licensee Effective Rate according to the license specific terms. Next, he removes assumed payment structure discounts consisting of a 15% fixed fee discount and a 10% per annum time value of money discount to calculate [REDACTED] Common RR- Basis Rate. Finally, to derive the Pre-Discount Rate, he further adjusts the Common RR-Basis Rate to: (1) exclude past sales volumes prior to the effective date of the [REDACTED], which has the effect of significantly reducing the number of units calculated to be sold under the terms of the agreement; (2) remove the consideration for past sales from the total consideration, which is clearly a component of the total negotiated agreement; and (3) uplift the future consideration to estimate what the future consideration would have been before the assumed volume, regional and term discounts, which is based on [InterDigital’s] own evidence of certain discounts that are said to have been offered. Overall, Mr. Bezant performs four adjustments to address assumed discounts for: (1) past sales; (2) an assumed volume discount based on [REDACTED] expected annual sales volume; (3) an assumed regional discount of 30% to address [REDACTED] sales in the Chinese market; and (4) an assumed term discount of 3.75% to reflect the 3.75 year term of the license. Mr. Bezant then calculates upper end and lower end rates for the [REDACTED].’

337. Mr Meyer emphasised he was not endorsing Mr Bezant’s figures (or approach). He also pointed out the dramatic difference in the Expected Sales Volume used by Mr Bezant in his first report and his own analysis of the Licensed Product volumes, which itself resulted in a large difference between Mr Bezant’s LER (\$[RED]) and Mr Meyer’s unpacked rate of \$[RED].

338. As Table 3 indicates, there are two sets of figures, one relating to Mr Bezant's Upper End Rates and one to his Lower End Rates. Naturally, Counsel chose to put the table on p19 with the more extreme net changes. The sales volume is reduced by 72.3% and the total consideration increased by 66%, resulting in the PDR being five times the LER. However, even Mr Meyer's Table 4, showing the effects on the Lower End Rates still showed an uplift in the implied per unit rate of 290%.
339. Mr Meyer's criticisms are embodied in these passages:

'In my view, the Common RR-Basis Rate and Pre-Discount Rate analyses are flawed and if presented without the full context could be misleading and, as such, should be viewed with the appropriate degree of caution. As addressed above, the Common RR-Basis and Pre-Discount Rates do not measure and represent the value at which the transactions actually took place. Instead, these metrics artificially adjust upwards the price at which the InterDigital portfolio was actually licensed by applying a series of retrospective adjustments to gross-up the realized royalty rate to take account of certain "discounts" InterDigital considers itself to have offered during negotiations. As these "discounts" have been applied by InterDigital to its starting position and/or so-called "program rate" in negotiations, the effect is invariably to return to effective rates consistent with InterDigital's starting position or notional "program rate" during the negotiations rather than what was actually agreed upon. I do not regard this as a correct, useful or informative approach at all, as it effectively simply measures what one party to the negotiation, InterDigital, would like to have achieved (but did not actually achieve).

...The exercise of valuation should assess what the buyer and seller agreed to pay for a particular asset; not what one party to the transaction contends it is worth.

...In his analysis, Mr. Bezant does not seem to be attempting to estimate and present the value at which the transactions actually took place, but some other amount, which adjusts the actual royalty values of the transactions so as to reconcile them with InterDigital's internal desires for its royalty program. In my opinion, this approach is far removed from the principles of market valuation.'

340. It is to be noted that, in relation to Mr Bezant's approach to [REDACTED], Mr Meyer spoke in terms of 'assumed' discounts. The highpoint in InterDigital's fact evidence about [REDACTED] came in Mr Grewe's second witness statement:

'32 I have been asked what discounts were applied in reaching the [REDACTED]PLA.

33 The starting point would have been that [REDACTED] was eligible for a term discount, regional sales mix discount, volume discount, fixed-fee discount and a time value of money discount. Any movement on those would have been because of the particular negotiation and its particular context, and eventually we reached a place where both parties could live with the top line numbers even though the parties had differing views on [REDACTED] future sales mix and numbers as I explained at para 68 of my first witness statement. (This was in part due to each side having its own views built from the information available to that party)...' (my emphasis).

341. For completeness, in paragraph 68 of Mr Grewe's first witness statement, he said this:

'68 Discussions continued and in [REDACTED] we finally reached agreement. The [RED] PLA includes various discounts such as a term discount and a pre-payment discount. We also recognized that because [REDACTED] China exposure was increasing as a proportion of its overall exposure (as its sales elsewhere decreased for the reasons set out above) that it would become harder to get [REDACTED] to pay anything for its use of our patents. Through the use of the discount mechanisms and the changing market dynamics, we were eventually able to come to an agreement on a top line number, although the sides did not see eye to eye on many of the parameters. The [REDACTED] sales projections (at the table with InterDigital) were lower than what we believed they would end up at, while their statements to the outside world (beyond our negotiation table) were higher than what we believed to be the case (it transpired eventually that third party analysts such as Counterpoint came to forecast [REDACTED] sales in a similar light to those we were looking at). After much back and forth on the rates and the volume parameters, eventually we reached a place where we both looked at what was on the table and decided we could live with it. We agreed on the amount of the consideration but we never fully agreed on what the assumptions were.'

342. I also observe that none of these discounts are mentioned in the [REDACTED] PLA itself. Accordingly, I consider that Mr Meyer was correct to characterise the discounts applied by Mr Bezant as 'assumed'. I also consider that Lenovo were correct to characterise these assumed discounts as a rationalisation internal to InterDigital. As I have already noted (see paragraph 260 above), in *TCL v Ericsson*, Judge Selva commented unfavourably on Ericsson's internal memorialisations of their licence deals. However, at least those documents were prepared, as I understand it, at the time the deal was concluded. There is no evidence whatsoever that InterDigital rationalised the structure of their PLAs as containing the various discounts applied by Mr Bezant. I am sure that if there had been such contemporaneous documents generated within InterDigital at the

time they would have been produced. So, it is to be noted that the rationalisations of InterDigital’s previous PLAs was performed by Mr Bezant *purely* for the purposes of this case.

343. Mr Bezant defended his approach on the basis he was applying the ‘logic’ of the discounts explained in InterDigital’s fact evidence. He accepted in cross-examination that he had not undertaken any analysis as to whether the volume discounts said to have been applied by InterDigital were economically justifiable. This is an important point to have in mind when considering Mr Bezant’s evidence. In effect, he was saying ‘these discounts are the cards I have been dealt’ and was expressing no view as to whether those cards were good or bad.

MR BEZANT’S UNPACKING OF THE LENOVO 7

344. In his second report, Mr Meyer presented 4 key criticisms of the way in which Mr Bezant derived his unpacked LER for each of the InterDigital LS licences. Although Mr Meyer asserted that the overall effect was that Mr Bezant’s LERs were overstated, it is apparent that some of Mr Meyer’s criticisms went to reliability. Some were accepted by Mr Bezant, so I need not labour those, but some remain to be assessed.

Mr Bezant’s derivation of separate rates per standard

345. It will be recalled that all the Lenovo 7 were LS licences. Notwithstanding that, Mr Bezant derived per standard per unit rates and ad valorem rates. This required Mr Bezant to assign to each of those PLAs an apportionment between standards. His methodology was examined by Mr Meyer, who summarised what Mr Bezant had done in the following table:

**Table 10: InterDigital Lump Sum Agreements
 Summary of Mr. Bezant’s “Proxy Royalty” Running Royalty Licenses for the Lump Sum Licenses**

Licensee	Contemporaneous “Proxy Royalty” Running Royalty License	Rate Applied		
		3G	4G	5G
1 Samsung (2014) ¹¹⁰	RIM 2012 PLA			
2 Huawei (2016) ¹¹¹	Sharp 2016 PLA			
3 Apple (2016) ¹¹²	Sharp 2016 PLA			
4 LG (2017) ¹¹³	Kyocera 2018 PLA			
5 ZTE (2019) ¹¹⁴	Asus 2019 PLA			
6 Huawei (2020) ¹¹⁵	Royalty rates “published as part of IDG’s programme rates launched in 2020”	0.40%	0.50%	0.60%

346. In cross-examination, Mr Bezant agreed the following points:

- i) For all PLAs prior to 2020, that he apportioned the lump sum consideration between standards by constructing proxy royalties based

on the most recent running royalty licence concluded by InterDigital prior to the LS licence in question.

- ii) For Huawei 2020, executed after InterDigital published its programme rates on its website, he used those rates (with the associated caps and floors) in his apportionment.
- iii) Accordingly, he used a different source for the split for each LS licence.

347. From my examination of various PLAs and Mr Meyer's analysis of the sales splits of various licensees, it is apparent that there can be considerable variation between licensees in their geographical sales which also affect the sales mix between standards. For example, Latin America is a significant market for Lenovo, but it is one in which 2G phones were still being sold in significant volumes even after 4G was the dominant standard in the major markets.
348. For these reasons, I am inclined to agree with Mr Meyer's criticism that Mr Bezant's approach introduced unnecessary assumptions into the analysis. Since the PLAs did not set out separate rates per standard nor any agreement as to the split of the licensee's sales by standard, Mr Meyer regarded this additional unpacking step as producing speculative and less reliable results. I consider Mr Meyer's view has considerable force.

HEVC and Wi-Fi

349. Mr Bezant did not make an apportionment between cellular technology and other technologies licensed in InterDigital's PLAs such as HEVC and Wi-Fi. Mr Bezant did this on an assumption that prior to 2019, InterDigital attributed 100% of the value to the cellular portfolio. In his second report, Mr Meyer established to my satisfaction that this assumption was incorrect and that InterDigital's current position is that cellular technology alone accounts for around 87% of the total value of InterDigital's portfolio with HEVC and Wi-Fi accounting for 13%. Although these relative proportions will have changed over time, Mr Meyer also provided figures which showed that over the term of the [.....] PLAs, those entities are expected to sell nearly 5 billion smartphones that include Wi-Fi and HEVC technology. The net result of Mr Bezant's failure to apportion between cellular on the one hand and HEVC and Wi-Fi on the other is that the LERs for the LS PLAs set out in his first report are overstated.

Non-handset sales

350. Mr Bezant initially excluded non-handset sales from his analysis, and he acknowledged that as a result his rates 'are somewhat overstated'. Mr Meyer acknowledged that this may not be a material difference for many of InterDigital's licensees, but he provided figures to show this assumption made a material difference when unpacking Samsung 2014, Apple 2016 and Huawei 2020. Although each company has a different profile of products, the basic point was the same. By excluding non-handset sales and apportioning all the consideration to handsets, Mr Bezant's royalty base is understated and his effective rates overstated. Mr Meyer set out the following table to show the

various units included and excluded by Mr Bezant. It can be seen there was a significant understatement of the product sales:

Table 14: Comparison of Mr. Bezant’s Included Handset Sales and Excluded Non-Handset Sales for the Samsung, Apple and Huawei Licenses (in millions)¹⁴⁸

	A	B	C = A + B	D = B / C
	Included Units	Excluded Units	Total Units	Percentage of Understatement
Samsung (2013-2017)				22.0%
Apple (2016-2022)				26.3%
Huawei (2020-2023)				14.6%
Total				22.4%

351. It is right to note however that Mr Bezant did update his analysis to include non-handset sales for Samsung 2014, Apple 2016 and Huawei 2020.

Early termination of Samsung 2014

352. Mr Bezant assumed that Samsung 2014 would terminate early i.e. after 5 years, notwithstanding Mr Merritt’s evidence that *‘economic terms were such that it was more advantageous for Samsung to not terminate the agreement and for it to extend for the entire 10 years, which is what Samsung elected to do.’* For that, and other reasons, Mr Meyer was of the view that this was an unrealistic assumption to make, which led to a significant understatement of the number of units – around 30%.

THE OVERALL EFFECT

353. Using his weighted average approach, Mr Meyer calculated that Mr Bezant had overstated the weighted average per unit rate for Samsung 2014, Apple 2016, LG 2017, ZTE 2019 and Huawei 2020 by approximately 37% or \$0.07.

354. Based on Mr Bezant’s analysis, InterDigital submitted that their 5G Extended Offer was FRAND, whereas Lenovo’s offer was plainly not FRAND.

355. In their Opening Skeleton for trial, InterDigital correctly anticipated that their discounts, and volume discounts in particular, would be under particular scrutiny. Their position was explained as follows:

‘164 As explained in InterDigital's evidence, while the payment structure discounts that it has given are a pure matter of economics, and while term and renewal discounts can be thought of in like terms, the volume discounts that it has given are, in one way or another, reflecting the commercial reality of negotiations and are means that have to be used to get commercial deals done. Faced with the reality of hold out, known to both sides of any negotiation, InterDigital has no realistic choice but to recognise that commercial reality and offer bigger players with more

power to hold out increasing discounts if they are to get them to take a licence at all. Mr Djavaherian and Mr Meyer seek to sideline the relevance of volume discounting and decide for themselves not to take it into account.’

356. Indeed it was clear that Mr Meyer disagreed on several points of principle embodied in Mr Bezant’s approach. In their opening, InterDigital highlighted two big picture points.
- i) First that Mr Meyer attacked Mr Bezant’s CBR and PDR analysis on several bases, the most important being: first, that those rates are not what was actually agreed between licensor and licensee; second, Mr Meyer suggested that what Mr Bezant had done was to ‘*artificially adjust upwards*’ the apparent rate arising out of the comparables for comparison and to ‘*upwardly reconcile*’ them with InterDigital’s offer. InterDigital contended that Mr Meyer had rather missed the point of Mr Bezant’s approach.
 - ii) Second, Mr Meyer criticised Mr Bezant for ‘*insufficient analysis and discernment as to which licenses are comparable to Lenovo*’. InterDigital pointed out this highlighted a fundamental difference in approach taken by the two experts, contending that Mr Meyer seeks to identify the most comparable licensees to Lenovo (excluding all others) and use (only some of) the licences with those counterparties in his analysis and then to focus further the list by weighting those comparables.

THE LENOVO/MEYER APPROACH TO UNPACKING AND COMPARISON

357. With access to the various InterDigital PLAs which were disclosed in this action (under terms as to confidentiality), Lenovo and Mr Meyer launched a full-scale assault on InterDigital’s approach to licensing. I can summarise Lenovo’s principal contentions as follows:
358. InterDigital operates a ‘flexible’ licensing ‘program’ in which InterDigital charges smaller licensees at a much higher rate than it charges the biggest handset sellers in the market. Lenovo suggests there are three main elements to this.
359. As to the first element, Lenovo suggests that InterDigital has done this by operating a programme with very high notional headline rates – in the 1-2% range. Lenovo suggested that these rates would imply a total aggregate royalty burden of as much as 20-40% of the selling price of a handset, far in excess of anything considered reasonable. Lenovo points out that InterDigital does not seek to defend those rates in these proceedings and submits that, having agreed a number of licences with mainly smaller licensees using those rates as a starting point, InterDigital in 2019 cut these headline rates very considerably. For example, as Mr Merritt said in his witness statement, InterDigital ‘decided’ to lower its headline 4G ‘program’ rate to 0.5%. Lenovo contends that even this rate is far too high, but submits the important point is that even InterDigital

recognised that its previous terms were unjustifiable. It may be noted that InterDigital's 5G Extended Offer has 0.45% as its 4G rate, but this is the 'program rate' with the two 5% discounts embedded.

360. The second element of InterDigital's approach, so Lenovo contend, is that, when licensing the biggest players in the mobile handset market, the PLAs were made at much lower rates. Lenovo submit that InterDigital seeks to justify these much lower rates as involving the giving of 'discounts' but Lenovo contend that the alleged discounts are just an attempt to compensate for the fact that InterDigital's headline rates were indefensible.
361. Lenovo contend that, based on these significantly lower rates, InterDigital managed to secure PLAs with some of the largest telecoms implementers – Samsung, Apple, Xiaomi, LG, ZTE and Huawei. Lenovo point out that these deals were for large figures in absolute terms. They are all LS deals. They address past and future sales in different ways, but Lenovo submit that they have delivered licence fees, which, when calculated on a simple per-unit basis, fall in a range which is multiples below InterDigital's headline rates.
362. The suggestion from InterDigital in opening was that all these deals with the larger players resulted from hold-out – see the quote in paragraph 355 above. This is a critical issue which I examine later. By contrast, Lenovo submit that the licence rates agreed with InterDigital's 6 largest licensees are, on InterDigital's own evidence, the result of a compromise between willing licensor and willing licensee and the best evidence of a FRAND rate.
363. In summary, therefore, Lenovo relied on the Lenovo 7 as a basket of the best comparables, analysis of which provided a 'market rate' for InterDigital's SEP portfolio. I shall have to discuss various issues about Mr Meyer's approach to unpacking each of the Lenovo 7. On top of those issues individual to each PLA, Mr Meyer then applied various adjustments. Here I will just identify the results of Mr Meyer's analysis at the two key stages.
364. After revisions to take account of certain criticisms made by Mr Bezant which Mr Meyer accepted, his analysis culminated in the following summary in his third report:

Market Rates from the Six Comparable Licensees

A

Before Adjustments

	Samsung	Apple	LG	ZTE	Huawei (2020)	Xiaomi	Weighted Average Market Rate
Past Rate							\$0.07
Future Rate							\$0.24
Blended Rate							\$0.20

Economic adjustments to match Lenovo license

1. Sales mix by standard
2. Geographical sales mix between developed and emerging markets
3. Geographical sales mix relative to IDC patent holdings

↓

B

Adjusted to Lenovo

	Samsung	Apple	LG	ZTE	Huawei (2020)	Xiaomi	Weighted Average Market Rate
Past Rate							\$0.07
Future Rate							\$0.20
Blended Rate							\$0.16

365. As indicated, first Mr Meyer derived both past and future rates, and an overall blended rate (blending past and future), from each PLA. He then applied three economic adjustments designed to conform the rates from each PLA to Lenovo’s specific circumstances. I return to consider his economic adjustments later.
366. The right-hand column shows Mr Meyer’s preferred rate – a weighted average. In fact, Mr Meyer conducted three different weighting exercises:
367. For the 3 PLAs for which Mr Meyer derived a past rate (LG 2017, ZTE 2019 and Huawei 2020), the weighted average was achieved by weighting the past rate for each PLA by reference to the unit sales under the PLA in question relative to all the past unit sales. The weightings were, respectively, 38.7%, 24.4% and 36.9%. Similarly for the future sales, albeit that there were now six weightings: 50.5%, 18.6%, 2.5%, 0.3%, 14.1% and 13.9%. Similarly also for the weighting of the blended rates which produced Mr Meyer’s headline rates of \$0.20 before his economic adjustments and \$0.16 after: 40.6%, 15%, 6.6%, 3.2%, 15.8%, 18.8%.
368. Hence, Mr Meyer’s approach yielded a blended (past and future) rate for Lenovo of \$0.16 per unit.
369. InterDigital contended that virtually every stage of Mr Meyer’s analysis was wrong and I shall have to consider their criticisms later.
370. InterDigital was highly critical of Mr Meyer’s weighting process, contending that it produced an output weighted very heavily towards the largest volume, longest term licence in the Lenovo 7 i.e. Samsung 2014 and away from the licence most similar to Lenovo in terms of volume and term i.e. LG 2017 (whose

weightings I have underlined above). In that regard, InterDigital pointed out that Mr Meyer had not weighted by annual sales volumes, but by sales volumes over the whole term of the licence in question, and the terms varied.

DEVELOPMENTS IN THE SUBSEQUENT REPORTS OF MESSRS BEZANT AND MEYER AND IN CROSS-EXAMINATION

371. Due to the fact that Mr Bezant and Mr Meyer had taken radically different approaches in their first and main reports, in their subsequent reports each (a) identified alleged errors in the approach of the other and often presented corrected figures and (b) attempted a degree of rationalisation of the two approaches. Some alleged errors were accepted, with corrected analyses being presented in their respective third reports (although Mr Meyer corrected to wholesale ASPs in his second report). As I mentioned earlier, Mr Bezant served a fourth report, the primary purpose of which was to present his calculation of the lump sum for InterDigital's 5G Extended Offer, but in which he also responded on Huawei 2016.
372. Based on one attempt by Mr Meyer to rationalise the two approaches, which Mr Meyer presented in Revised Meyer 2 Table 16, Lenovo submitted in closing that there was far less between the valuation experts than might at first sight appear. This revised Table 16 presented Mr Meyer's comparison of his unadjusted effective per-unit rate for each of the Lenovo 7 and the nearest equivalent from Mr Bezant – his 'effective per-unit rate'. Even where the experts arrived at the same rate for Samsung 2014, they did so via wildly different figures for total cellular units and total payment. I regard their respective rates for Huawei 2016, Huawei 2019 and Xiaomi 2021 as significantly different. The rates for Apple 2016 are at least in the same ballpark. The rates for LG 2017 are very similar and derived from broadly similar figures. Overall, this table shows how the two experts took sometimes very different figures for each of the total cellular units covered by each PLA and the total cellular royalty payment.

InterDigital Lump Sum Agreements Comparison of Meyer and Bezant Total Units, Royalty Payment and Effective Per-Unit Rate⁴⁹

Licensee	Meyer			Bezant		
	Total Cellular Units Covered by License (M)	Total Cellular Royalty Payment (M)	Unadjusted Effective Per-Unit Rate	Total Cellular Units Covered by License (M)	Total Cellular Royalty Payment (M)	Effective Per-Unit Rate
1 Samsung (2014) ⁵⁰						
2 Apple (2016) ⁵¹						
3 Huawei (2016)						
4 LG (2017)						
5 ZTE (2019)						
6 Huawei (2020)						
7 Xiaomi (2021)						
Subtotal: InterDigital Lump Sum Agreements / Weighted Average Per-Unit Rate	8,446.2	\$1,698.82	\$0.20	7,125.2	\$1,998.96	\$0.28

373. Mr Meyer explored some of the disparities in his second and third reports. He presented his Revised Table 8. It is important to realise that this table only covers units during the period of each LS PLA. Furthermore, the Bezant figures for LG, ZTE and Huawei are based on his Lower End Rates which include more units.

**LEO and Xiaomi Confidential Revised Meyer 2 Table 8:
Comparison of Revised Meyer 1 and Bezant 2 Handset Units Under the
InterDigital Lump Sum Agreements⁴⁸**

	Samsung	Apple	Huawei (2016)	LG	ZTE	Huawei (2020)	Xiaomi
Reference Years							
Revised Meyer 1 Handset Units (millions)							
Bezant 2 Handset Units (millions)							
Difference (millions)							
% Difference	-0.4%	+3.1%	-20.3%	-23.1%	-23.8%	-30.3%	+2.7%

374. Mr Meyer's point was that for Huawei 2016, LG 2017, ZTE 2019 and Huawei 2020, Mr Bezant used materially lower numbers of units, resulting in higher per-unit royalty rates unpacked from these LS PLAs. In his second report, Mr Meyer explained that Mr Bezant had used, as his primary data source, InterDigital's own internal estimates of the number of units likely to be sold during the term of the PLA, and these were often materially lower than the public market data suggested. Mr Meyer also suggested InterDigital's estimates lacked corroboration or support, appeared to be self-serving and were not an

appropriate source to use. I agree. I agree also with the more general point that it is not appropriate to rely on one party's subjective assessment of a PLA.

375. Mr Meyer considered it was more appropriate to rely on independent third party analysts or third party data, as the data is unbiased and not tailored to one negotiating party's views or objectives. He used IDC data and noted that another of InterDigital's expert witnesses, Dr Putnam, had also used IDC data and extolled the virtues of it. On this point, I agree with Mr Meyer.
376. At the conclusion of Mr Meyer's evidence, I asked him about some of the other major disparities reflected in his Revised Table 16 (above):
- i) First, the approximately \$[RED]m difference in the payment for Huawei 2016. Mr Bezant had already identified the differences between them on Huawei 2016 in his fourth report. He said Mr Meyer had incorrectly excluded \$[RED]m of cash consideration and [RED]m units sold between the effective date and the execution date of the PLA. Thus, Mr Bezant took the entire consideration for a longer period which embraced a higher total for the units covered.
 - ii) Mr Meyer explained that Mr Bezant's total was a combination of moneys paid before the agreement and themselves a function of an earlier Chinese decision in the arbitration. Mr Meyer reasoned that \$[RED]m was attributable to the past and \$[RED]m for the future but he did not know enough about the past because there was no arbitration over the situation outside China. He therefore considered his future rate of \$[RED] gave a 'really good picture' about how the parties viewed the future under the 2016 PLA.
 - iii) Second, as to the difference in total royalty payments attributed to Apple 2016. To similar effect, Mr Meyer explained there were difficulties in working out what was attributable to the past, because (a) there was a short period when Apple was [RED] (b) there was an issue about whether 4G was licensed under the previous licence and (c) it was unclear how much was licensed through contract manufacturers like Pegatron. So Mr Meyer reasoned in effect that the parties came up with a sum for the past to resolve the [REDACTED]. Then they dealt with an amount for the future. Mr Meyer considered the future rate to be more reliable.
377. On these points, I find Mr Meyer's approach to be more reliable than that of Mr Bezant. I pick up these points again in my consideration of the Lenovo 7 (see paragraph 623 below).
378. Another attempted rationalisation occurred in Mr Meyer's cross-examination. Counsel put this document (X9) to Mr Meyer which summarises the two different approaches to the unpacking of LS licences:



379. It is important to see this document for what it is – a piece of advocacy. It attempts to portray individual steps in the approach of each expert, as well as particular rates, as equivalent. Generally, it is unsafe so to assume, as I explain below.

380. Mr Meyer agreed the following key differences in approach:

- i) Mr Meyer split the consideration into past and future components at the start of his analysis, whereas Mr Bezant isolated the future consideration relatively later, at the start of his calculation of the PDR (see the first step in the blue PDR box).
 - ii) Mr Meyer calculated rates blended across all relevant generations of technology (and favoured a single rate which blended past and future), whereas Mr Bezant identified rates per standard for his LER. His by-standard approach was carried forward into his calculation of the CBR and PDR, being based on the LER.
 - iii) Mr Meyer accepted that his Effective End-User Rate (i.e. before his economic adjustments) could be compared with Mr Bezant's LER. To be clear, however, Mr Bezant's LER by standard has to be converted into a single rate blended across generations to be directly compared.
 - iv) It was suggested to Mr Meyer that Mr Bezant's LERs for PLAs which covered past sales were depressed *'from that which will be calculated using his method but only using future consideration focusing on the future'* because *'the past is always accounted for at a heavily discounted rate'*. Mr Meyer responded by pointing out that when Mr Bezant calculates his PDR, he eliminates all past consideration and all past units which, for licensees like LG and ZTE with significant past released sales, means you get elevated future rates. Counsel suggested it was a very simple point: that if you have not taken out the past which is heavily depressed you have a blended rate which is a depressed overall rate. Mr Meyer appeared to agree but pointed out that the overall rate reflects the entire agreement. *'The past release and future are all a consideration, so that is what it is. The overall rate should have the past in it'*.
381. Finally, I should point out that the end results (Adjusted Effective End-User Rate vs PDR) are not comparable. On Mr Meyer's approach, he takes his Effective End-User Rate and then makes each of the three indicated adjustments. Each adjustment is particular to Lenovo and based on his assessment of the relevant difference in (a) sales mix by standard (b) geographic sales mix and (c) patent coverage between the licensee in question and Lenovo. His Adjusted Effective End-User Rate is the rate he suggests should apply to Lenovo.
382. Mr Bezant's PDRs, as he emphasised, are not actual royalty rates charged to a licensee unless that licensee qualified for no discounts at all. However, it is apparent that several smaller licensees did not qualify for any discounts so their PDR was the same as their LER, NEC 2010, NEC 2016, Sharp 2016, Wistron 2017, Pegatron 2017 and Innovius 2019 being examples, along with four 3G rates for Panasonic. His point was directed more at the Lenovo 7, where it is true his PDRs were not the rates charged.
383. Mr Bezant applied his analysis to InterDigital's 5G Extended Offer and (in his first report) to Lenovo's Pleaded Case, to derive PDRs by standard for each. He then compared those rates with those suggested by various ranges of PLAs – see his Tables 2-1 and 2-3 set out above.

384. However, the reason why the end results are not comparable is because to calculate the rate(s) applicable to Lenovo, Mr Bezant had to take his derived PDR by standard and then apply the discounts for which Lenovo qualified. Those were set out in his Fourth Report, as part of his calculation of the lump sum implied by InterDigital's 5G Extended Offer.
385. The payment structure-related discounts for Lenovo (cf. those applied to get from the LERs to the CBRs) were:
- i) A 20% fixed fee discount applicable during the term of the licence, i.e. 4% per year of the licence term;
 - ii) A 10% per annum time value of money discount, only applicable after the date of execution of the licence.
386. The non-payment structure related discounts for Lenovo (cf. those applied to get from the CBRs to the PDRs) were:
- i) A 5% term discount applicable during the term of the licence;
 - ii) A 5% regional sales mix discount, applicable during the term of the licence;
 - iii) A volume discount, applicable only during the term of the licence (I note that no volume discounts were applied to past sales (i.e. those prior to 1.1.2018)). Mr Bezant did not specify what these discounts amounted to in his report, but his Appendix 31 shows the following volume discounts by year: 2018, 6.7%; 2019, 6.5%; 2020, 5.3%; 2021, 8.5%, 2022, 8.8% and 2023, 9.1%.
 - iv) A 10% discount on past sales, on the basis that the rate for past sales is the same as the discounted rate for future sales (i.e. after the 5% term and 5% regional sales mix discounts have been applied).

THE EMERGENCE OF LG 2017 AS AN 'AWESOME' COMPARABLE.

387. Sensing perhaps that I was not overly keen on the volume discounts arguments, as the trial progressed and certainly by the time of closing argument, InterDigital had developed a fall-back position. InterDigital picked up on Mr Meyer's characterisation of LG 2017 as an 'awesome' comparable. They submitted that one way to ensure that the effect of volume is accounted for without numerically having to assess its effect is to focus on the comparables with very similar volumes to Lenovo i.e. LG 2017, ZTE 2019 and RIM 2012.
388. InterDigital also submitted that LG 2017 had further advantages in that (a) its term was short (albeit not as short as the contemplated Lenovo licence); (b) it was a licence to which the disagreement over how to address HEVC and Wi-Fi does not apply; (c) Mr Meyer had accepted and corrected for a flaw pointed out by Mr Bezant regarding his inclusion of 2G sales; (d) Mr Meyer had also accepted that it was right to use projections which the parties had actually agreed. On this basis, InterDigital submitted that there was no remaining issue

between the experts and Mr Bezant's figures on LG 2017 should be accepted 'at this stage' by which InterDigital meant at the LER stage.

389. The position is not nearly so simple, as I discuss below from paragraph 612 onwards, not least because Mr Bezant's figures were 'future only' rates.
390. Having outlined the approaches taken by Messrs Bezant and Meyer and the major developments which occurred during the trial, there is one more major topic I must consider before I turn to consider the principles I must apply in order to decide the issues raised on their respective approaches.

THE APPROACH TO PAST SALES

391. Despite the differences which I have already outlined between the approaches of Messrs Bezant and Meyer, it emerged that they had adopted similar (but not identical) approaches to their treatment of past sales.
392. On this topic there are a number of moving parts which have to be considered.
393. The first is the way in which InterDigital have approached the issue of past sales in its licensing negotiations. Mr Merritt explained this as follows:

'53 Where past sales have gone unlicensed, InterDigital will also seek to identify the licensee's past sales over the relevant period. InterDigital will then consider what the realization rate should be for those sales. Typically, this results in past sales being discounted for a couple of reasons, to reflect the real (or at least a closer approximation of the real) value of the historic sales. First, there can be significant legal limitations in terms of securing payments for past sales. So, as an example, if a region had a three year statutory look back period, that would limit our ability to secure damages (or royalties) on sales in that region before that time. Second, and in addition to the first point, one has to acknowledge that collecting the payment of past fees through the Court system is an inherently slow, expensive and risky process. Third, perhaps because of this, past sales have typically been in licensing negotiations the area where the licensor can be the most flexible, and this was widely understood among licensing professionals

54 That said, licensors do not want to create incentives for licensees to delay license negotiations on the hope that it would get better rates on past sales. So, as a result, InterDigital developed a couple of approaches to deal with past sales. The first approach was where you had a customer that was renewing a license and there was a modest gap between the old license expiring and the new license starting. In those cases we would be more likely to forgive those past sales or apply a steep discount since we were dealing with what was, in effect, a good customer or a compliant licensee. The second situation would be one where we conclude a deal with a new customer where there

was considerable past sales. In that case we would sometimes apply what we called a 'donut hole' concept. The sales that would be forgiven would be the very old sales (given the legal challenges with them anyway) and then the most recent sales would be captured by the usually retroactive effective date of the agreement. The sales in the middle (in the donut hole) would essentially be left to deal with upon the next renewal. Typically, if the next renewal occurred without delay or litigation, then the sales in the donut hole would be discounted when the new deal was executed. Basically, the idea was to give the customer a financial incentive to become a long term licensee. A third situation that we have yet to deal with would be the customer that takes InterDigital through years of litigation and only signs a license under a court ordered mandate. In that case any forgiveness for past sales should be modest since the licensee has, by their choice and actions, extended that period of past sales and they should not be in a better position than compliant customers who took licenses in a more timely manner.'

394. Mr Djavaheerian drew attention in his second report to InterDigital's Further Information served in response to Lenovo's request dated 17 August 2021, in which InterDigital confirmed that:

"The average accounting discounts applied by the Claimants to the value of the released sales in historical InterDigital agreements between 2012 to 2016 are, for each past year, 61% for -1, 45% for -2, 34% for -3, 26% for -4, 6% for -5 and 0% for -6".

395. Mr Djavaheerian argued that a party who litigates is not therefore to be "punished" with payment of windfall royalties, but rather FRAND should be assessed with consideration to the properly unpacked terms that are ordinarily available from the SEP owner.

396. Mr Djavaheerian had made essentially the same point in his first report. He argued that the inconsistency between the way in which past sales were heavily discounted and forgiven beyond a certain time in other licences and the terms of the 5G Extended Offer was liable to discriminate against Lenovo. He also made this point, which he rightly suggested was counterintuitive:

'Significantly, and although this may seem counterintuitive, it should be appreciated that the exclusion and/or discounting of past sales in the royalty terms of a license may actually work to the longer term advantage of a licensor. This is because the nominal discounting or omission of significant volumes of past sales from a license in practice allows the licensor to claim a higher effective rate for those sales which are included within the scope of the forward-looking term of the license. In effect, the licensee in such circumstances can simply agree to a nominally higher forward looking headline royalty rate in return for some form of de facto or implied (as opposed to express)

discounting or exclusion of past sales, which is frequently framed in a way that is practically difficult for third parties to analyze and unpack. For the licensor, extracting an increased headline rate which it may seek to rely on as a comparable in other negotiations and/or litigation, and which (in the case of a listed company) it may take back to shareholders and investors as purported vindication of its licensing program rates, is a valuable outcome. One of the effects of this practice is that then if, in another case, that increased rate is applied to all sales (i.e., without accounting for the value of the past units that were effectively dealt with by the terms of the agreement, regardless of whether formally "released") the total royalty will be significantly overstated relative to those other licensees. Viewed at a high level, it may be considered that the practice of omitting certain past sales and/or discounting the royalty to be paid for past sales is a counterbalance to the parallel practice of the nominal overstatement (on the face of the license) of the headline rate.'

397. This point is not only counterintuitive, it is exactly the effect which is so heavily criticised by Mr Meyer in his analysis and which I find is not consistent with a FRAND approach (see further below). Lenovo cannot have it both ways.
398. The second (but related) topic is the way in which InterDigital, for the purposes of accounting and reporting its financial results, 'recognises' the value attributable to a past release/past sales from a LS licence. As CFO, Mr Brezski explained in his evidence how InterDigital determines what proportion of a LS licence to recognise as attributable to the past. InterDigital prepares and reports consolidated financial statements in accordance with accounting principles generally accepted in the US (US GAAP). Patent licence agreements are analysed in accordance with US GAAP which requires InterDigital to (1) identify the contract with the customer; (2) identify the performance obligations; (3) determine the transaction price; (4) allocate the transaction price to the performance obligations and (5) recognise revenue as the entity satisfies the performance obligation(s). The general rule is that '*Accounting guidance requires us to perform a relative fair value allocation of the transaction price to the deliverables*'.
399. In relation to a fixed fee licence which contains a release of liability for past infringement, Mr Brezski explained that their accounting allocation of the transaction price to this obligation is often discounted relative to the allocation for the future. He said this is done to best reflect the relative accounting value of the past sales '*after considering factors including but not limited to, how far back the past infringement occurred and the geography of the infringing sales.*' He explained that InterDigital evaluate the accounting value of a past release using two approaches. One (developed about 5 years ago) applies an 'accounting realisation rate' which is an estimate of the portion of the total recoverable value that would be realised/recovered to each year of past sales released under a licence. It is based on the average discounts applied to the value of released sales in historical InterDigital PLAs. The realisation rate

differs for each year in the past and reflects an increasing discount up to a maximum of 6 years ‘*at or about which point the value is typically assessed to be zero for accounting purposes*’. Prior to that, Mr Brezski said they evaluated each PLA individually on the basis of the same factors as above. The second approach arose from a settlement with Microsoft which covered [REDACTED]. For reasons which will appear I need not set out all the detail related in his evidence.

400. I should add that, for PLAs which contribute 10% or more of InterDigital’s total revenue in a relevant reporting period (i.e. 3 months for a 10-K), InterDigital identify the licensee’s contribution. In this way, InterDigital makes public the contributions from its larger licensees. Indeed, as will appear below, Mr Meyer used the disclosures in various InterDigital form 10-Ks to identify what sums had been recognised as attributable to past sales.

401. Mr Grewe gave some slightly more concrete evidence about InterDigital’s approach to releases for past unlicensed activity:

‘44 InterDigital’s approach to releases for past unlicensed activity prior to the term of the license is largely informed by an appreciation that were we to sue to recover such sums then the amount recoverable would be subject to a statutory limitation period and other uncertainties. I don’t know if there is a maximum look back duration, but we have been known to look back six years if we are able to do so. We therefore consider what the sum would be if we recovered 100% of the royalties for the period during which the licensee has been using our technology without paying for the same and then discount the sum based on practical considerations such as the risks, time and expense that would be incurred in any litigation(s) seeking to recover the same.’

402. Against that backdrop, I turn to consider where there was a measure of agreement between Mr Bezant and Mr Meyer and where they differed.

403. It is easier to start with one of the approaches taken by Mr Meyer, in which he did derive different rates for the past and future. When unpacking the lump sum licences that involved released past sales, Mr Meyer proceeded on the basis of the statements made by InterDigital in its financial reporting documents as to the sums it ‘recognised’ as attributable to the released past sales. He worked on the basis that those amounts provided in InterDigital’s audited financial statements provided a reliable source for determining InterDigital’s assessment of the consideration associated with past versus future sales. On that basis he assigned the amount stated in the financial statements to the period prior to the effective date of the PLA.

404. In short, for the LS licences that he considered covered past sales, he took the following figures: LG 2017: \$34.5m, ZTE 2019: \$19.5m (comprising \$5.5m attributed to the release period + \$14m attributed to patent transfers from ZTE), Huawei 2020: \$19.2m. It is right to note however that Mr Meyer’s preference was for a royalty rate blended across past and future – in other words, applying

the same rate to past sales as in the future, so that a split in consideration between past and future is not necessary.

405. Mr Bezant's approach was considerably more complicated. Lenovo submitted it was not easy to find out how Mr Bezant treated past sales and suggested that the answer could be found in Mr Bezant's Appendix 17 (and later in Appendix 32). No doubt this was, in part, because Mr Bezant concentrated on presenting PDRs and some LERs as 'future only' rates. In his first report, Mr Bezant made this rather oblique reference under the heading of 'Other features of IDG's licences':

3.5 I understand that the treatment of past sales is an "*area where [InterDigital] can be the most flexible*". [fn 21: Merritt 1 [53]] Given the risks, time and expense of seeking to recover fees for unlicensed past sales, [InterDigital] may agree to a release of such sales, fully or at a reduced rate, to reach an agreement and secure royalties on any future sales whilst avoiding litigation. I understand that "[w]hen assessing whether a license is consistent with [its] program [InterDigital] would always separate past from future". [fn 22, Grewe 1 [45]. See also Merritt 1 [53], Mattis 1 [28] and Grewe 1 [44]].

406. I will discuss Appendix 17 below, but it is necessary to start in Mr Bezant's first report. In [5.43] he explains the steps he took to derive the PDRs for LS and Hybrid LS licences from the CBRs. In summary:

- i) He decided to focus on the future period only, 'to account for variability between licences in their treatment of past sales (such as the availability and extent of any discounts)'.
- ii) He determined the consideration related to future royalties by deducting the consideration relating to past sales from the PV-adjusted total consideration.
- iii) He uplifted the PV-adjusted future consideration to estimate the consideration before all discounts '(that I assume were given)' are taken into account.
- iv) He divided the PV-adjusted uplifted future consideration by the PV-adjusted future sales volume or revenue to obtain a per unit or *ad valorem* PDR.

407. In his Appendix 8 Mr Bezant explained that there were two publicly available sources of information on the split of consideration from the LS licences: InterDigital's Form 10-Ks and InterDigital's Financial Metric reports. He explained he used the latter, because he said he did not know the meaning of 'past sales' as used in the Form 10-Ks, since it was unclear whether they represented sales prior to the execution date of the PLA or prior to the financial quarter in which the PLA was executed. His detailed workings were set out in Appendix 9, where he also compared the results from the two sources. From

his analysis he concluded that the ‘past sales’ as reported in the Form 10-Ks were based on the execution date quarter, rather than the effective date.

408. His comparison between the Form 10-K figures, compared with what he calculated as the sales prior to the execution date from the 'Financial Metrics' can be seen in this table, from which it appears that the latter figures were higher by the percentages indicated.

<i>Past sales - Execution Date check</i>			
Licence	Past sales as per IDG Form 10-K	Absolute difference	Relative Difference
<i>Huawei 2020</i>	19.2	2.8	15%
<i>LG 2017</i>	34.5	5.9	17%
<i>Apple 2016</i>	141.4	23.9	17%
<i>Huawei 2016</i>	129.9	9.7	7%
<i>Samsung 2014</i>	86.3	11.1	13%

409. In his second report, Mr Bezant was critical of the varying discounts for the past which arose from Mr Meyer’s analysis. However, as Mr Meyer said in cross-examination, ‘InterDigital was the one that established the consideration for the past and the future’. Mr Bezant introduced his Appendix 17 (to his second report) in this passage:

"5.3 In this section, I focus on the future period and present the future blended Licensee Effective Rates that result from my unpacking analysis to enable a direct comparison between Mr Meyer's and my results. I focus on the future period rate because I understand that the treatment of past sales is an "*area where [InterDigital] can be the most flexible*". [fn 184, Merrit 1 [53]]. It appears to be highly dependent on the specific circumstances of the licence negotiations, [fn 185] so the treatment of the past in one licence does not necessarily provide a useful guide to the relevant treatment of past sales for the subject licence. I present the results for the past in Appendix 17.

Fn 185: For example, in Appendix 17, I demonstrate the wide range of past period effective rates implied by the comparable licences, and the large variation in the implied discounts that appear to have been granted, by [InterDigital], on past sales, from 0% to 95%."

410. So, part of Mr Bezant’s purpose in Appendix 17 was to undermine Mr Meyer’s approach. Mr Bezant stated ‘*Mr Meyer’s blended effective rates for past and future periods imply a past sales discount of 0% to 95%.*’ It is apparent these discount rates were calculated by Mr Bezant after having made his suggested corrections to Mr Meyer’s rates. Mr Bezant presented, in figure A17-1, the corrected rates and the range of past sales discounts implied from Mr Meyer’s future and past rates. He suggested the range was wide, ranging from 75% to 95% for LS licences and from 0% to 90% for RR licences. In that figure, Mr

Bezant suggested the implied discount on sales from LG 2017 was 88-95%, from ZTE 2019, 94% and from Huawei 2020, 75-95%.

411. However, what is clear is that Mr Meyer had not applied these discounts. They were the product of taking the figures which InterDigital had ‘recognised’ in their annual reports.
412. Mr Bezant, however, concluded that the consideration for past sales stated in InterDigital’s financial statements appeared to relate to the past sales up to the end of the quarter prior to the execution date quarter. For this reason, if the effective date of the licence is the same as the end of the quarter prior to the execution quarter (as it was for Apple 2016 and Huawei 2020), then the consideration for past sales in InterDigital’s financial statements can be used as the pre-effective date consideration. Where this was not the case (for LG 2017 and ZTE 2019), Mr Bezant estimated the consideration relating to the period up to the execution date based on InterDigital’s financial metrics reports. Mr Bezant concluded this did not have a material impact on implied future rates, except in the case of ZTE 2019. For ZTE 2019, Mr Bezant estimated the past consideration as \$11.2m, whereas Mr Meyer worked on the basis of the figure of \$19.8m referred to in InterDigital’s 2019 Form 10-K, whilst acknowledging that this figure related to ZTE 2019, Funai and Innovius. This difference has a significant effect on the calculated implied rates for the future, precisely because the future period in the ZTE 2019 PLA was so short.
413. I also had regard to Appendix 32 to Mr Bezant’s Fourth Report, which contained his updated analysis:
- i) His Samsung’14 tab records (without early termination) the total consideration of \$[REDACTED]m with a PV of \$[REDACTED]m after a deduction for [REDACTED], divided as \$[REDACTED]m for past sales and \$[REDACTED]m (effective date) - \$[REDACTED]m (execution date) future sales.
 - ii) His Apple’16 tab records the total consideration of \$[REDACTED]m with a PV of \$[REDACTED]m, divided as \$[REDACTED]m for past sales and \$[REDACTED]m future sales.
 - iii) His LG’17 tab records the total consideration of \$[REDACTED]m with a PV of \$[REDACTED]m (without early termination) divided as \$[REDACTED]m for past sales and \$[REDACTED]m future sales based on IDG’s 2017 Form 10-K, p37.
 - iv) His ZTE’19 tab records the total consideration of \$[REDACTED]m with a PV of \$[REDACTED]m, divided as \$[REDACTED]m for past sales and \$[REDACTED]m future sales (although no source was identified).
 - v) His Huawei’20 tab records the total consideration of \$[REDACTED]m with a PV of \$[REDACTED]m, divided as \$[REDACTED]m for past sales and \$[REDACTED]m future sales (again, no source identified).
414. Some of the differences between the two approaches are accounted for by some of the fact evidence. So, for example in relation to Samsung 2014, Mr Grewe explained that although the PLA was signed in June 2014, it had an effective

date of January 1, 2013 at Samsung's request. This meant that Samsung were continuously under licence and, as far as I could determine, sales prior to the execution of the PLA were treated in the same way as current and future sales.

415. The greater part of the differences are accounted by differing approaches of Messrs Meyer and Bezant.
416. Mr Meyer maintained his overall criticism of Mr Bezant's analysis on the basis that overall, it resulted in artificially inflated future rates. I will deal later with the other respects in which Mr Meyer accused Mr Bezant of artificial inflation of future rates: these concern attributing fewer sales to the future which increases the future rate when unpacking a lump sum structure. What is striking is that Mr Meyer (in order to calculate separate rates for past and future) was prepared to adopt the allocations made by InterDigital in its financial statements as to what proportion of a LS consideration to attribute to the past, when these allocations were the primary reason of the inflation of future rates.

MY ANALYSIS

417. It is necessary to consider whether it is appropriate to treat past and future sales differently. In closing, Mr Speck KC made the obvious point that if a lower rate is attributed to past sales compared to the future, it encourages delay by the licensee. The longer the licensee holds out, the less they have to pay.
418. In this regard, InterDigital and Lenovo presented differing analyses and reasons, but fortunately, it is not necessary for me to resolve the differences between the two experts' treatment of past sales.
419. On either expert's figures, the royalty rates for past sales were very considerably lower than the future rates derived by either expert, the disparity being much greater in Mr Bezant's figures.
420. It is clear that each expert was content to adopt (in one form or another), InterDigital's allocation of LS consideration between past and future. This gave me considerable pause for thought, as to whether I should depart from their effectively agreed approach (at least at this high level). After considerable reflection, I came to the view that each expert had adopted InterDigital's allocations for different reasons and/or because they produced different effects. So far as Mr Bezant's analysis was concerned, his adoption of InterDigital's past/future allocations favoured InterDigital's case because the effect was to increase future rates.
421. I continue to keep in mind that Mr Meyer favoured an overall blended rate but, to the extent that he derived different rates for past and future, his adoption of InterDigital's allocations favoured Lenovo's argument that whatever it should pay for the past, it should be heavily discounted to avoid discrimination.
422. In my view it is incorrect to proceed on the basis of the subjective assessments made by InterDigital of the proportion of a lump sum which should be attributed to past sales releases for their accounting purposes. It is evident, in my view, that these assessments were made by InterDigital (at least in part) in order to be

able to quote higher future rates. Whether there were other justifications does not matter. What matters for present purposes is that InterDigital's assessments result in implied rates which are low (sometimes very low) for the past and higher for the future. It seems to me that the precise date when a lump sum deal is done should not affect the royalty paid per device.

423. I propose to adopt the same approach as in *UPHC* and in *TCL v Ericsson*, that the same rate should apply to past as future i.e. Mr Meyer's blended rate approach. This is for two cumulative or alternative reasons.
424. First, notwithstanding US GAAP, the principles applied and Mr Brezski's lengthy explanations, I formed the impression that InterDigital retained significant room for manoeuvre in the way they apportioned an overall LS consideration to a past release and therefore as to the sum they 'recognised' in their financial reporting as attributable to a past release/past sales. This is reflected in the past and future rates derived by Mr Meyer for the Lenovo 6. One of the consequences of the (relatively smaller) sums which InterDigital 'recognise' as attributable to the past is that the (relatively higher) sums attributable to the future result in higher royalty rates for the future. Not only can InterDigital cite these higher future royalty rates as representative to other potential licensees, InterDigital can also use them in any renewal negotiations. Another consequence is the apparently very heavy discounting by InterDigital as to past sales.
425. Thus, my impression is that InterDigital's allocations of overall LS consideration to past and future was somewhat artificial. These allocations do not feature in the particular PLA and were not agreed with the licensee. Furthermore, they do not match what I regard as the normal way for others in the market to assess the rate derivable from a LS licence which is to take the total consideration and divide it by the best estimate of the number of units covered to derive a per-unit dollar rate for the purposes of comparison.
426. In case I have formed the wrong impression about these allocations, and they are *mandated* by accounting principles, there is a second reason (which is an alternative or additional reason) why I consider InterDigital's allocations should not bind an analysis of what is FRAND and it is this. FRAND is concerned with the relationship between licensor and licensee. Therefore, FRAND rates should focus on the money (and other benefits) which pass between licensee and licensor, with the other benefits being translated into monetary terms as part of the unpacking. FRAND is not concerned with and should not be affected by either one party's internal justification for the sum paid or received, nor with the way in which one party seeks to deal with those sums in its accounts, whether they are internal or made public, particularly when these internal justifications and financial reporting do not form part of the licence agreement. InterDigital's consistent approach was to work on the basis of the 'value' in their hands of a particular payment. This I find is wrong in principle because it automatically injects InterDigital's subjective view of that 'value' into the analysis.

FRAND – GENERAL PRINCIPLES

427. I approach the issue of FRAND terms on the basis that I am dealing with a willing licensor with InterDigital's portfolio of patents and a willing licensee with Lenovo's array of products and sales.
428. The first point to note is that a willing licensor and a willing licensee would not find themselves in the situation which I have to consider. Those persons would not have negotiated over such a long period, nor would they have litigated this action. Instead, they would have reached an agreement many years ago.
429. Nonetheless, it remains possible to consider what a willing licensor and willing licensee would agree in the current situation, both as to the future period under consideration and what they would do regarding the long period of sales by Lenovo before FRAND terms were settled.
430. One of the complications here arises from the long period before FRAND terms will have been settled. This is not an uncommon situation in this period when the practical application of FRAND principles is still being worked out. Recent experience has shown that this type of situation has given rise to debate around several issues, which I consider are inter-related.
431. The first is the application of national limitation periods and how they should be taken into account in a FRAND assessment. In this and other countries, the limitation period is six years, but I recognise that other countries have shorter limitation periods – for example, in China the limitation period is 3 years and extends to any request to protect civil-law rights, not just damages.
432. In this case, there are many sales of cellular products which were made by Lenovo long prior to relevant limitation periods. Whilst limitation periods would be directly applicable if the claim was for damages or an account of profits, this is a claim for the determination of the terms of a FRAND licence.
433. Lenovo did not plead limitation as a direct defence to this claim. Instead, limitation is pleaded indirectly, in support of Lenovo's plea that it would not be FRAND for the agreement to require payment of significant sums for past sales. Lenovo say that a willing licensor and a willing licensee would have agreed some payment in respect of past sales but it would have been a reasonable and proportionate lump sum having regard to all the circumstances. Two particular circumstances are highlighted: the terms of other comparable agreements and the effect of 'relevant or arguably relevant' limitation periods, highlighting China (3 years) and the US (6 years).
434. This is a particular manifestation of an argument which often featured in Lenovo's submissions: if the result of this trial was that Lenovo were treated adversely (in their perception) compared with how other InterDigital licensees had been treated in the past, that would be discrimination. This is a rather simplistic argument, in that Lenovo were content to accept any differences in their favour, but any perceived to be adverse were branded as discrimination.

435. It is also a non-sequitur. It assumes that all the comparable licences on which Lenovo chose to rely were FRAND in every particular, but I do not consider this to be a valid assumption. Obviously, in this comparables analysis, I have to base my decision on one or more PLAs which I consider to be comparable, but that does not mean I must slavishly follow the licensing practices of InterDigital which are reflected in those licences.
436. The second I characterise as the *Optis* issue. Thus, there has been extensive debate (typified in *Optis F*) over precisely when a commitment is required to take a licence on FRAND terms. I have summarised above the points I derive from *Optis F*. I wholeheartedly agree with the principle identified by Meade J. that, in the context of English proceedings, upon a finding that the implementer would be infringing a valid SEP in the absence of a FRAND licence, the implementer must undertake there and then to take a licence on such FRAND terms as may be determined at a later trial in the proceedings.
437. That requirement is, after all, nothing more than a particular manifestation of the position of a willing licensee and is designed to prevent or diminish hold out. However, in my judgment, this is only a very partial solution to hold out. In my view, the real solution lies elsewhere. It would be possible to eliminate or significantly reduce hold-out if there was no incentive for the licensee to delay reaching agreement. This consideration focusses attention on (a) the influence of limitation periods and (b) the resulting heavy discounting for the past. Recognising that I must operate within the jurisdiction which I have to exercise, it seems to me that the solution to delay, whether all of it is attributable to hold out or not, is for the willing licensee to pay for a licence to cover all past units.
438. As more FRAND determinations are decided, such differences as there are or as there are perceived to be between the approaches taken in different jurisdictions should converge and eventually disappear. Furthermore, the application of the FRAND obligation will have become clearer. Once that desirable state of affairs is near or is achieved, the determination of FRAND terms between two particular parties should become much easier. There may still be obstacles (such as confidentiality of licences which are thought to be comparable) which may require parties to resort to litigation so that a confidentiality regime can be established by a court, but many more licence arrangements ought to be capable of being agreed through negotiation.

MY ANALYSIS

439. Taking a step back from all the detail of each side's approach to unpacking, I discerned the following general picture.
440. Lenovo's big point was their objection to the size of the volume discounts which InterDigital say they applied.
441. For their part, InterDigital were, naturally, exercised about the length of time over which Lenovo had been taking advantage of their SEP patented technology without a licence. This was at least part of the reason why InterDigital's 5G

Extended Offer stipulated that the same rate should be paid for the past as for the future.

442. In principle (and leaving aside time value of money considerations), this last stipulation does not seem unreasonable. It also chimes with my analysis at paragraph 417 above *et seq.* For example, why should the basic FRAND rate change at the date when the licence is entered into?
443. The problem, however, with InterDigital's approach is the differing rates calculated for past and future, and the subsequent demand that the (inflated) calculated future rate should also apply to the past. There was considerable force in Mr Meyer's contention that Mr Bezant's approach, which involves heavy discounting for the past, with a disproportionate share of consideration being shifted to the future, results in an inflated future rate. Although the 5G Extended Offer embodies InterDigital's 'program rates', it is notable that Mr Bezant's inflated future rates are being used in an attempt to justify these 'program rates'.
444. It will be recalled that Lenovo's initial position was that nothing should be paid in respect of the past, although this very hard-line position had to be abandoned. In its place, Lenovo were content to adopt InterDigital's practice of heavy discounting for the past, because it favoured Lenovo's overall aim to pay as little as possible. As I have previously mentioned, the evidence suggested that the adoption or development of this practice was prompted by two factors: one the influence of limitation periods (which vary around the world) and the other being the difficulty in recovering damages for infringement in many countries around the world.
445. A further feature of InterDigital's offer must be noted. The effective date of the licence on offer is 1st January 2018. I commented above that this date appears random, but it appears InterDigital chose it so that they could include past sales going back to the start of an assumed limitation period of 6 years i.e. 1st January 2012. Hence, Mr Bezant's calculation of the lump sum implied by the 5G Extended Offer in his Appendix 31 includes past sales going back to that date.
446. This brief overview shows, in my view, that it cannot be assumed that the approach advocated by either side is consistent with FRAND. It also emphasises the importance of the following (often interrelated) points of principle, some of which I have touched upon already:
- i) Generally, in the unpacking of any allegedly comparable PLA, whether account should be taken of the subjective views of either SEP licensor or SEP licensee. I have already touched upon a key example of this, in relation to the treatment of past sales, above, but the issue has wider ramifications.
 - ii) Whether InterDigital's system of discounts, with particular emphasis on its volume discounts, as assumed in Mr Bezant's analysis, is consistent with FRAND.

- iii) Whether limitation periods have a role to play in the relationship between willing licensor and willing licensee.
 - iv) How to eliminate or discourage hold-out.
 - v) Whether discounts (often substantial) in relation to past sales should be part of a FRAND analysis, plus a related issue of whether interest should be awarded on 'past' royalties.
 - vi) Whether it would be discriminatory against Lenovo not to apply the sort of discounts (e.g. for volume, for past sales) applied in the allegedly comparable InterDigital PLAs.
447. Although I have found it convenient to discuss these points of principle in this particular order, they were developed collectively and over time during my consideration and writing of this Judgment. I also note that whilst issues ii) regarding volume discounts and vi) were squarely raised (in fact by Lenovo), the other issues were not identified by the parties, even though they were in issue on the pleadings.

POINTS OF PRINCIPLE WHICH ARISE IN THIS CASE

1) Value to the SEP licensor vs royalty payments

448. Taking a step back from all the detail, it struck me that when assessing payments made to InterDigital in the context of SEP licensing, InterDigital's fact and expert evidence focussed on the value of those payments in the hands of InterDigital, as opposed to focussing on the payment made between the two parties to the licensing transaction. Although at first sight the distinction may appear somewhat obscure, it is important.
449. The point can be illustrated by the two ways in which Mr Meyer unpacked various of the Lenovo 7 PLAs. Overall, Mr Meyer preferred a blended approach where effectively the total sum paid or payable over the term of the licence was divided by the total number of units (some or all of which derived from a forecast as to future sales) to yield the effective royalty paid or payable per unit.
450. Mr Meyer also presented rates for past and future separately. He did not explain why he did this notwithstanding his preference for the blended approach. It may have been for the purposes of comparison.
451. In order to present separate rates for past and future, Mr Meyer had to divide the total consideration paid under a LS PLA into components for past and future. He derived the sum attributable to the past by looking at InterDigital's public statements in its 10-Ks or public accounts. Mr Bezant used a similar technique, even though, for detailed reasons, the two experts did not always derive the same figure as representing the consideration for past sales.
452. In his witness statement, Mr Brezski, the CFO of InterDigital, explained how InterDigital used the applicable accounting principles to derive 'a relative fair value allocation of consideration received to each performance obligation'.

453. Whilst this explanation appeared to apply set rules, it was clear that they provide InterDigital with significant leeway to apportion sums received in ways which benefit InterDigital's business model and business interests. Specifically, I was satisfied that the use of these accounting rules injected a significant subjective element into the analysis.
454. The whole approach is also bound up with the notion that significant discounts are often given in respect of past sales. As far as I could discern, a principal reason why the practice has grown up of giving significant discounts for past sales has been the difficulties in recovery. The evidence from the licensing experts identified the two main difficulties in recovery. The first was the fact that until relatively recently, a SEP licensor faced the prospect of having to sue in many different jurisdictions since it was unclear, at least until *UPHC* and *UPSC*, that a single court had the power to determine the terms of a global FRAND licence. Although it is now clear that the UK has that power, and other jurisdictions are beginning to follow suit (China in particular), it is clear that the previous perception has had a long-lasting effect in SEP licensing practices.
455. The second main perceived difficulty is the impact of limitation periods around the world. As I have already indicated, many countries have a 6-year limitation period but some significant jurisdictions have shorter periods e.g. 3 years. Thus, if a SEP licensor sued for damages for patent infringement in a particular jurisdiction, it was realistic to assume that the licensor would not be able to recover damages going back further than a maximum of 6 years. This gave implementers an incentive to spin out negotiations for as long as possible and put the burden on SEP licensors to sue within the limitation period to avoid losing royalties which were falling out of the limitation period.
456. When, however, the claim is for the Court to determine FRAND terms, the question is whether this second perceived difficulty is real or not. For the reasons I explain below, I do not consider that limitation periods have any part to play in a determination of FRAND terms between (necessarily) a willing licensor and a willing licensee.
457. What is clear, however, is that these perceived difficulties have had a profound effect on shaping InterDigital's SEP licensing practices. Those effects persist and are reflected in Mr Bezant's approach.

2) Volume Discounts

458. This is a major issue in this case and for that reason I propose to deal with it in some detail. In particular I must examine the justifications put forward on behalf of InterDigital in support of both (a) volume discounts generally and (b) volume discounts of the size said to be applied to the largest licensees. To put the debate in context, Samsung was given a volume discount of around 80% and Apple around 60%. InterDigital's case was that Lenovo was entitled to a volume discount of around 30%. Mr Meyer characterised the total discounts said to have been applied in Samsung 2014 at around 85%.

459. In the fact evidence, both Mr Merritt and Mr Grewe said volume discounts were necessary to avoid hold-out by larger companies, an argument which was expanded upon in Mr Brismark's first report at [82]:

'82 From a business point of view, offering a volume discount can provide high volume implementer with the motivation to engage in or conclude licensing negotiations. Where an implementer's volumes are high, there is otherwise a potential financial incentive to litigate, even when the significant cost of litigating in multiple jurisdictions is taken into consideration. Litigation can potentially lead to a reduction in the royalty rate, and may further delay the signing of any deal (and therefore payment under the license) for a number of years. These effects reduce licensor income, result in the resources of the licensor being tied up for long periods (during which other licenses can potentially not be pursued) and since the implementer may be arguing for a relief in payments on release (or part of the release) from past sales, delaying the license may result in a greater number of sales released without any royalty compensation to the licensor. Therefore, it can be economically efficient for the licensor to introduce volume discounts in order to discourage licensees from holding out and forcing licensors to litigate, but instead rather negotiate a deal.' (my emphasis).

460. Mr Brismark also drew attention to the fact that volume discounts are commonly offered in patent pools and gave as an example the pool for SEPs relating to the H.264/AVC video codec administered by MPEGLA.
461. In his first report Mr Djavaheerian began his section on volume discounts as follows:

'7.25 Whilst volume discounts may not necessarily imply non-FRAND terms, the discounts in the region of 70% (or more) offered by InterDigital would seem to create significant discrimination within the market and an "uneven playing field" for competition - particularly excluding smaller and medium-sized companies seeking to enter the market. The intention of ETSI and standardization, on the other hand, was to create a more-level playing field in which companies could innovate and compete. If a 70% discount is offered, that puts a new market entrant at a significant disadvantage to an established market participant. Further, many of the companies which are entitled to a notional 70% discount end up agreeing to a lump sum license structure rather than a running royalty. The notional discounts offered to these larger companies does not seem to be grounded in any clear reason other than an effort at rationalizing that the rates which have been negotiated so as to present them for an "unpacking" that does not reflect the actual economics of the deal (e.g., does not reflect the actual amounts paid per unit by the licensee).'

462. Mr Brismark responded relatively briefly, essentially making two points: (1) unless volume discounts are accounted for in unpacking, it is not possible to compare the economics of different agreements and (2) it is economically sound (my emphasis) that a licensor offers volume discounts because they effectively incentivize a licensee to sign up rather than go into protracted litigation, as well as providing savings in the costs incurred by the licensor and freeing up resources to pursue other licensees.
463. Mr Djavaheerian's second report contains a lengthy section in response to the discussion and treatment of discounts in the first reports of Mr Brismark and Mr Bezant. This section effectively encapsulates the reasons for the fundamental disagreement between the two sides. Mr Djavaheerian argues that what matters to companies engaged in SEP licensing negotiations is the effective rate paid by any given licensee and he says for most licensees, this is primarily a function of the total amount paid and unit volumes. This, he says, is the reality of the value which has actually changed hands under the transaction.
464. Mr Djavaheerian contrasts that with the internal reasoning that a licensor might utilise to justify to itself and its shareholders why it was prepared to agree to a particular set of terms. He refers to all of the 'discounts' referred to as appearing to be internal justifications for InterDigital deviating from its preferred 'program rate'. He points out that a similar fact pattern was commented on by Judge Selna in *TCL v Ericsson* and quotes the passage (which I have already set out above) in which the Judge was critical of experts 'cherry-picking facts from the business cases...'.
465. Mr Djavaheerian also made the point that the language of 'discounts' adopted by Messrs Brismark and Bezant led ultimately to a position that InterDigital's rights were somehow worth far more than what major industry players have shown themselves willing to pay, and which InterDigital was willing to accept. The implication of this point is that taking account of these discounts would be antithetical to a comparables analysis.
466. Mr Djavaheerian also refers to the size of the volume discounts said to be applied for Samsung and Apple. He said it was simply inconceivable that if InterDigital truly believed that its 'program rates' were FRAND that it would have given away billions of dollars by charging Samsung 20% or less of what InterDigital believed they were otherwise entitled to.
467. By contrast, Mr Djavaheerian said the more logical conclusion is that the royalty terms agreed with the larger licensees better represent what was actually achievable in the market between a well-resourced licensor and well-resourced licensees engaged in rigorous negotiations.
468. In his further response, Mr Brismark accused Mr Djavaheerian of not dealing with the actual justification he had given at paragraphs 82-83 of his first report. I do not consider this is a fair accusation. In fact, Mr Djavaheerian quoted Mr Brismark's paragraph 82 and made four discrete points in response:
- i) First, he criticised Mr Brismark on the basis that he was considering the issue only from the perspective of the licensor.

- ii) Second, Mr Djavaheerian pointed out that the incentive to litigate will only exist if the rates on offer are not perceived as FRAND.
 - iii) Third, he agreed that litigation can potentially lead to a reduction in the royalty rate, but because it is often the case that SEP owners claim royalty rates which are too high, adding that this is not evidence of ‘bad behaviour’ or leverage by the licensee.
 - iv) Fourth, as regards Mr Brismark’s ‘economically efficient’ argument, he was of the view that this could only be the case where the quantum of the discount is similar to the costs of litigation. Mr Djavaheerian made reference to Samsung 2014, where he said the total discounts were 85% of the headline rate and total some \$[RED] billion.
469. Mr Brismark also accused Mr Djavaheerian of not taking account of the realities of the alternative for the licensor if they do not drop their prices to get a deal. He said that Mr Djavaheerian was assuming that a licensor will eventually be able to get a licensee to take a licence in a reasonable time at a rate which is in fact reflective of the value of the portfolio and that, if not, the licensor can always go to court to obtain clarity as to what the FRAND rate is for its portfolio. He accused Mr Djavaheerian of not taking account of the fact that it was not until UKSC in 2020 that there was any precedent which confirmed that licensors could go to court for an adjudication of a global FRAND licence absent agreement by both parties. I found this observation a little short-sighted for two reasons: first, it fails to acknowledge the impact of *UPHC* in 2017 (even if everyone recognised it would be subject to appeal); second, because even the threat of an injunction which would exclude a licensee from a major market can be sufficient to bring otherwise reluctant licensees to reach a deal.
470. The final points made by Mr Brismark were more general. First, he said that Mr Djavaheerian’s analysis does not factor in the risk that, even after licence terms have been ruled as FRAND, Lenovo could simply refuse to take a portfolio licence at that stage. He noted that Lenovo reserved its position on that point. On his second point, he returned to the topic of hold-out:
- "22 It is my experience that the risk of hold-out by implementers is what has pushed the price of licenses below the value that the patent portfolio offers. In my experience, it is not feasible for a licensor to litigate against every implementer that is holding out in multiple jurisdictions and so discounts are often used by licensors to at least incentivize implementers to take a license."
471. As for the evidence from the accountancy experts, in his first report, Mr Bezant simply applied volume discounts according to the two tables referred to in InterDigital’s fact evidence, without commenting on whether they were justified.
472. In his first report, Mr Meyer declined to make any adjustments in his unpacking related to any alleged volume discounts for a number of reasons.

473. First, he stated his understanding that parties may manipulate the terms of a licence using mechanisms like volume discounts in order to make the nominal rate appear higher or more difficult to unpack and that this can be a tactic used by SEP owners in negotiations so that the SEP owner can purport to unpack at an alleged higher rate per unit than is actually applicable to the licensee.
474. His second reason was based on a view expressed by Mr Djavaheerian that ETSI's intention was to avoid significant barriers to market participation or entry. If a material volume discount is on offer, that puts a new market entrant at a significant disadvantage compared to an established participant.
475. His third reason was his view that InterDigital's volume discounts did not appear to be grounded in any economic rationale other than to try to conform the negotiated rates so as to be able later to present those rates as being in keeping with 'program rates' or 'standard royalty rates'. He referred to the standard economies of scale in the production of tangible goods, but considered there was no basis to believe similar justifications applied in the context of licensing of cellular SEPs.
476. In Mr Bezant's second report, he reacted to Mr Meyer's refusal to apply any volume discount by referring to the justifications set out by Mr Merritt, Mr Grewe and Mr Brismark. He conveniently summarised their evidence in this passage, where he is addressing the LS comparables relied upon by Mr Meyer:

'For the set of licences on which he relies (i.e. the ones above the threshold of \$25 million), the unpacked rates that he estimates (that do not adjust for volume discounts) vary widely but broadly vary inversely with the potential volume of sales under the licence (that is, the higher the volume of sales the lower the overall royalty rate). Mr Meyer does not, however, consider what factors (beyond those he has tried to reflect in his unpacking analysis and subsequent adjustments to the unpacked rates) are likely to be the cause of that trend in the observed rates. For example, he ignores that IDG's use of volume discounts, and the level of those discounts, may reflect IDG's response to the effect on its bargaining position of the possibility of hold-out by larger licensees. In Mr Merritt's opinion, "*if [InterDigital] did not give such discounts, then those [large] companies would very well force [InterDigital] to litigate to try to get any royalties, and that that would involve large amounts of cost and time*". Mr Grewe considers "*[a]ll companies are capable of some degree of hold out but [...] larger companies had very significant leverage in negotiations because of their enhanced capacity to hold out from taking a license*".

Further, Mr Brismark explains that it can be economically efficient for the licensor to introduce volume discounts in order to discourage licensees from holding out. In his opinion, when unpacking a licence, the parties to a negotiation need to take account for volume discounts and/or caps in order to compare the rates implied by different licences on an economically

comparable basis. He also explains that larger licensees have a higher ability to hold out and then negotiate a low rate in respect of unlicensed past sales as IDG relies on royalties from these players to support ongoing R&D and business activities.

Mr Meyer excludes smaller licensees where he is concerned that the incentives of the parties in the negotiation mean that the agreed rates are too high. In contrast, not only does he rely on just IDG's licences with larger licensees, which may be affected by the possibility of hold-out, but his analysis also does not account in any way for the volume discounts, which may to some extent reflect the effect of hold-out...’.

477. Once he had seen how Mr Bezant employed volume discounts to derive his PDRs, in his second report Mr Meyer was able to be more specific in his criticisms. I have already set out much of the relevant material from Mr Meyer’s second report on this topic above and need not repeat it here.
478. In the light of the debates in the written evidence, I was looking forward to seeing how the issues would come into sharper focus in cross-examination.
479. Mr Djavaheerian agreed that there was nothing inherently wrong with volume discounts, and that the issue was over their size. He said when they operate to substantially change the economics of one licence as compared to another, you start to get into issues of discrimination and other problems. He agreed volume discounts were ‘not unusual’ and had seen them. He knew that the MPEGLA patent pool applied them. Two examples were put in his cross-examination bundle which he pointed out came from the same pool administrator. The first was AVC which operated caps at different totals of units, with the discount increasing as the units sold increased, Lenovo being one of the licensees. The second was HEVC, with a much higher annual cap, but a similar structure. The two examples illustrated possible volume discounts of between around 60% up to around 80%.
480. Thus, the justification put to Mr Djavaheerian was that volume discounts, and of a similar size, were employed in other SEP licensing.
481. The cross-examination of Mr Bezant simply confirmed that he had assumed that volume discounts had been applied by InterDigital in accordance with its prevailing tables. It was put to him that none of the PLAs contained any volume discount, to which he responded by saying the LS PLAs simply contain the price. Mr Bezant confirmed he had done no analysis of his own as to whether these volume discounts were objectively justified.
482. There was a greater focus in Mr Meyer’s cross-examination on the supposed economic justification for InterDigital’s volume discounts.
483. The basic point being put on all the discounts was that the subject-matter of the discount represented a flow of value from the licensee to the licensor. I note that this point had not previously been discussed in the written evidence. It is plainly true, as Mr Meyer accepted, that the early receipt of money is an

advantage to the licensor and does represent a flow of value. When it came to volume discounts, Mr Meyer started by drawing a clear distinction between volume discounts applied in respect of products and in respect of SEP licences.

484. With products, a manufacturer is likely to achieve economies of scale in its manufacturing and distribution and these can be reflected in volume discounts in the pricing. Mr Meyer was very clear that this justification simply did not apply in the field of SEP licensing. Counsel nonetheless pressed his question that, all else equal, there is an advantage to a licensor if the licence they conclude is for ten times the number of units of another.
485. Despite initial resistance, Mr Meyer eventually accepted this proposition. That was inevitable, but this questioning failed to distinguish between the advantage of receiving a very large lump sum covering ten times the number of units and whether the licensor received some separate ‘flow of value’ from the subject-matter of the discount.
486. Having secured Mr Meyer’s acceptance of an advantage, that left, as Counsel put it, the real dispute which is not about there being adjustments for volume, but how one assesses the size of the adjustment.
487. In response, Mr Meyer again emphasised that in the LS licences, there is no language about volume discounts at all. He characterised them as an illusion, generated by InterDigital. This characterisation was somewhat exaggerated, because a Volume Discount Table [F/p.143] was presented to RIM as part of InterDigital’s offer on 3rd October 2012. However, there is no evidence that this type of table was shared in negotiations with other licensees, at least until after InterDigital’s new transparency initiative. Consistently with that, as far as I could detect, the first time that Lenovo was presented with a volume discount table was in InterDigital’s offer letter dated 15th January 2020 – this was the tax table.
488. As far as I could detect, there were only two real advantages put to Mr Meyer of a licence for 10 times the volume of another. One which was explicitly identified was the transactional cost, which Counsel asserted could be huge for these transactions. This was not further elucidated but I understood the ‘transactional cost’ to be all the costs in getting a deal done which could include litigation and other business costs. I do not underestimate the costs of litigation in these FRAND cases, particularly when litigation is likely to break out in multiple jurisdictions. However, Mr Meyer’s point about Samsung 2014 applies once again. Even a huge ‘transactional cost’ (whether \$20m or even \$50m) is tiny in comparison with the sum which was discounted.
489. The other advantage is simply that the licensor receives ten times as much money, however the payments are made, whether by lump sum or quarterly or annual payments. Mr Meyer implicitly accepted that but was keen to emphasise that agreeing a large licence, the licensor is effectively setting a market rate which he has to live with.
490. Counsel suggested that Mr Meyer had not sought to measure or quantify the effect of sales volume on price. Mr Meyer responded with his point that 95%

of the units licensed by InterDigital have been licensed at his blended weighted average figure of \$0.20. Counsel's retort (which, if it was a question, was not one which the witness was given time to answer) was that Mr Meyer was not in a position to assess whether hold-out has caused a downward effect on prices where there is a very large volume.

491. The final blows in the exchange were Counsel's suggestion that it cannot be right to give Lenovo the benefit of standing in the shoes of Samsung and Mr Meyer's response that Lenovo was competing with all of the LS licensees (save now for LG which has exited the marketplace) and if Lenovo had to pay a rate which was, say, more than 10% greater than the rates they were paying, Lenovo's ability to compete would be impaired.
492. There is one more advantage which was not mentioned in the evidence directed to volume discounts but was mentioned elsewhere: that for a licensor like InterDigital, there is a distinct advantage in getting the market leader (or leaders) signed up as a licensee. Other potential licensees will think that the market leader(s) will have subjected the portfolio to at least a reasonable degree of scrutiny before signing up. They will also see at least indications of the scale of the deal(s) in InterDigital's public financial statements. This comes at a price, as Mr Meyer was keen to stress, because licences with the market leader(s) will be taken by potential licensees to set something of a market price for the portfolio. That is something which Mr Meyer said, the licensor appreciates when agreeing the deal.
493. Finally, I should mention that InterDigital only allows volume discounts for sales made during the term of the licence. This point was not always appreciated in the expert evidence. When calculating the lump sum from InterDigital's 5G Extended Offer, Mr Bezant applied the volume discount tax table for sales from 1 January 2018 through to 31 December 2023, which resulted in discounts per year ranging between 5.3% and 9.1%, but not for any 'past sales' i.e. from 2012-2017. By contrast, when Mr Meyer presented his final calculation of the effective per unit rate implied by InterDigital's 5G Extended Offer (\$0.51), his calculation (PKM-40.2) appears to apply the relevant volume discounts by year from 2007 to 2021, these varying from 0% to 19.8%.
494. If volume discounts do not apply to the past at all, then it would follow that the effective per unit rate implied by InterDigital's 5G Extended Offer is greater than \$0.51. It is not necessary to determine what the actual value would be but it is clear that is less than the \$0.81 per unit rate which Mr Meyer initially derived when he was using retail sales data.

Discussion

495. Having considered all the evidence on the issue of volume discounts I have reached the clear conclusion that the volume discounts said to have been applied to the largest InterDigital licensees (i.e. in the range of 60%-80%) do not have any economic or other justification. Instead, their primary purpose is to attempt to shore up InterDigital's chosen 'program rates'. Their primary effect is discrimination against smaller licensees. In summary, my reasons are as follows.

496. First, in the field of SEP licensing, there is no equivalent to the economies of scale which can be achieved in the manufacture and distribution of physical products. Leaving aside transactional costs in concluding licences (which I address below), the licence or permission given to utilise the standardised technology (whether 3G, 4G or 5G) of the SEP licensor is intangible and effectively costless. This does not ignore the costs of R&D, but those are sunk costs.
497. Second, Mr Brismark's 'economically efficient' argument simply entails the licensor reducing the rate or rates it is demanding to a level where the licensee accepts them. The licensee does not care about InterDigital's internal justification for the reduction and may not know anything about it. I confess I do not really understand where the economic efficiency lies. It is entirely InterDigital's choice whether to lower their rates (from the 'program rates') or not. For the larger deals (e.g. Samsung 2014 and Apple 2016), where the sums involved are very much larger than any 'transactional' cost (including litigation), economic efficiency points in exactly the opposite direction - it would be economically efficient for InterDigital to litigate in order to persuade the licensees to pay rates which were closer to their 'program rates'.
498. At best, the arguments can only justify relatively small volume discounts, where, for example the overall transactional costs (including the costs of litigation) are of the same order of magnitude as the quantified discount. As I have indicated above, this argument gets nowhere near justifying the sizes of discounts given to Samsung or Apple or indeed, even the volume discount apparently available to Lenovo.
499. Third and most importantly of all, the sizes of the volume discounts said to be used by InterDigital plainly discriminate against smaller licensees, which is exactly what FRAND is supposed to avoid. Neither Mr Brismark nor InterDigital had any answer to this point.
500. Fourth, I consider it is important to keep in mind how implementers like Lenovo are able to access and use each generation of standardised technology. A SEP owner must invest in R&D, make his invention (assume), persuade the relevant ETSI Working Group to adopt his invention into the standard, write, file and prosecute his patent family in various territories and maintain them in force by paying the renewal fees, and declare to ETSI the relevant patent(s) as essential to a relevant standard. The SEP owner makes no explicit transfer of technology to the implementer.
501. Instead, the implementer acquires the technology by buying in chipsets, with the chipset manufacturer bearing the responsibility to give effect to a relevant standard in the chipset.
502. No doubt chipsets for a given generation of cellular technology will vary in their capabilities and performance, but all will implement the standardised technology along, no doubt, with many optional extras. A more expensive high-end 4GMM chipset might be incorporated into a high-end smartphone with a large touch screen and various other attributes attractive to the consumer. By contrast a lower-end, much more basic phone with the same 4GMM capability

may sell for a fraction of the price of the higher end phone. However, in terms of the standardised 4GMM technology, both phones use the same technology. Against this backdrop, I find it difficult to understand why the royalty paid for each of those phones should differ significantly or, for that matter, at all.

503. I take Mr Meyer's point that none of these volume discounts are documented in any of the PLAs and they are used in Mr Bezant's analysis to bring the actual rates back up to something at or approaching InterDigital's 'program rates'. This is classic *ex post facto* rationalisation designed to convert the actual rates charged into something else. This exercise is far removed from what those in the market actually do which is, as Mr Meyer described, to take the overall lump sum and the best estimate of the units involved to derive a per-unit dollar rate. Accordingly, I consider it is wrong in principle to attempt to increase those rates via the application of notional 'volume discounts'.
504. Fifth, I was unable to discern any separate flow of value to the licensor resulting from the volume discounts (see paragraph 485 above), separate from the advantage of receiving a large lump sum.
505. Sixth, the evidence that volume discounts of a similar magnitude were available from the AVC and HEVC patent pools does nothing to persuade me against my conclusion. I do not need to make any finding about those patent pools, although I suspect they are using volume discounts in the same way as InterDigital, as one of a number of levers they can use (a) to encourage licensees to sign up to a PLA and (b) to justify departing from any published programme rate(s).
506. Finally, the fact that volume discounts have been a part of InterDigital licensing for many years (according to Mr Merritt, since around 1997) does nothing to dissuade me from this conclusion. The appreciation of FRAND has come a long way since that time.
507. I emphasise that I am not deciding that volume discounts of any magnitude are not FRAND. One of Mr Meyer's final answers on this topic indicated that relatively small volume discounts might not take a rate outside the FRAND range.

InterDigital's Other Discounts

508. It will be recalled that Mr Bezant divided discounts into two categories in his analysis. He assumed that InterDigital had consistently applied certain non-licensee specific discounts, namely: for RR licences, any prepayment discounts and for LS licences, fixed fee and time value of money discounts. These were unwound in his analysis to go from his LERs to his CBRs. The second category of discounts were licensee-specific. So, to go from his CBRs to his PDRs, he (a) removed past sales and (b) unwound the assumed volume, regional, term or renewal discounts.
509. My conclusions on the volume discounts provide a sufficient basis for me to dismiss the relevance of Mr Bezant's PDRs. However, I should also address

the other discounts not least because in deriving his CBRs, Mr Bezant applied certain non-licensee specific discounts (as indicated above).

510. In the first round of InterDigital's witness statements, Mr Grewe and Mr Merritt described various discounts, some in specific terms and others more generally. Having read those statements, Lenovo asked various specific questions which Mr Grewe addressed in his second witness statement. These questions were as follows:
- (a) How and by reference to what criteria InterDigital determine if a licensee may be eligible for any discounts in accordance with their licensing programme;
 - (b) Lenovo's request for provision of a list of the discounts actually applied (and how they were determined in each case) if they were not determined in the same way for each licensee; and
 - (c) If the discounts were not determined in the same way for each licensee, why they were determined in different ways for different licensees, and the criteria or relevant factors applied to each determination.
511. Mr Grewe responded as follows:

'7 Prior to the publication of InterDigital's licensing program rates in 2020, the application of a discount in an opening offer, and whether that was explicitly stated, would depend on the level of discussions that had taken place before the opening offer was made, whether an NDA was in place, and how much we knew about the prospective licensee and the structure of licence they were looking for. Often, the opening offer (which would usually be running royalty but may set out both a running royalty and a lump-sum or fixed fee offer - what is set out will depend on what conversations have already taken place) would set out the undiscounted rates and would state (either in the offer itself or the meeting discussing the offer) that discounts may be applied depending on certain factors (i.e. those outlined above). As aspects of the agreement were better understood during subsequent discussions, such as the length of term, type of payment structure and timing etc., the related discounts would be included in future offers, even if this was not explicitly stated in the opening offer. After the publication of InterDigital's licensing program in 2020 the process remained very similar except that due to the publication of the licensing program we did not need to wait for an NDA in order to provide an opening offer. Our website sets out our rates per standard and also states that "*additional discounts may apply based on duration of the agreement, product volumes, payment timing and structure, special market considerations and other factors.*"

8 I cannot think of an example of where a licensee might be eligible for a type of discount but was not offered it during the course of the discussions / negotiations, and cannot think of any reason why that would be the case. However, as is also explained in more detail below, any resulting discount calculated based on an initial assessment of eligibility is a starting point in the negotiations and may well be subject to change as the structure of the license becomes more clear (for example changes could be made to address information conveyed by the licensee and/or information that emerges from other sources), and as the top line number and payment structure of the license is negotiated between the parties.’

512. Following that introduction, Mr Grewe proceeded to identify the various discounts:

- i) Fixed Fee/ Lump Sum Discount.
- ii) Time Value of Money Discount: his recollection was that it was typically around 10% per annum, although higher at certain points, and based on InterDigital’s cost of capital.
- iii) Term Discount (aka Time Discounts): 1% per annum, from 3% at 3 years up to a maximum of 10% for 10 years.
- iv) Pre-Payment Discount (which only applies to RR licences).
- v) Volume Discount: (discussed above).
- vi) Regional Sales Mix Discount: based on a 50% discount for sales in China only, but then rolled in with the licensee’s Rest of World sales to arrive at a blended worldwide rate.
- vii) Renewal Discount: variable and discretionary (based on the licensee’s behaviour including costs of litigation, negotiating history) but in the range of 5-20%.

513. Mr Grewe responded to the second question in this revealing passage:

‘26 Given our usual negotiation process, it is very difficult to provide a list of the discounts 'actually applied' for each finalized license and how they were determined, other than as explained further below. I have explained above how offers are expressed with regard to discounts during negotiations. If Lenovo's request seeks identification of specific discounts 'actually applied' in the sense of applied precisely to a separately negotiated price at the end of a negotiation, it misunderstands the nature of the negotiation that follows from an initial offer to the conclusion of the license agreement.

27 In our initial offers and during the negotiations, a series of offers and counter offers are usually made by both sides and further information about the licensee's business comes to light. Throughout the negotiations, we continue to discuss the offers, counteroffers, and revised offers internally and to calculate, using projection spreadsheets, how further variations of offers or potential offers might affect the top line value of the license. We also in that process consider the information we have about a licensee, the market in general, the scope of the license, and any outside factors that may affect such value. Throughout we continue internally to discuss and assess offers and counteroffers on the same basis, including applicability of discounts. The aim is to get to an offer which is acceptable to both sides and which is consistent with InterDigital's licensing program.

28 As will be appreciated while InterDigital takes care to make sure the end result through the use of appropriate discounts is consistent with the program, many times the licensee is more focused on what the top line number looks like when extrapolated to a per unit basis so that they can compare the values against what they believe others may have paid for their licenses based on publically available information. As such, even though the publically available information does not necessarily provide all of the pertinent information, as part of the back and forth process, it is the top line number and the value of the license that queries from the licensee ultimately focused on, more so than individual discounts themselves.

29 Even if an issue arose in any individual negotiation in respect of a particular discount (for example if a potential licensee claimed it should receive a larger discount for volume of sales) the prospective licensee is very unlikely to negotiate a reduced discount. That would be counter to its interests. As such, the ultimately agreed final rate or lump sum (i.e. the top line number) will be based, in InterDigital's perspective, on the licensee at least getting those discounts offered at the outset at the levels initially offered. In other words, even if there were to be any specific discussion of discounts in the negotiation it would likely only be to increase them.'

514. Bearing in mind this evidence was very carefully worded and likely to have been the product of heavy lawyering, nonetheless it tends to confirm my view that discounts were not uniformly applied.
515. Although as I have already indicated, the only full negotiating record available is that between InterDigital and Lenovo, the few references in that record to discounts tends to confirm that discounts were applied flexibly (i.e. not in a uniform manner). Thus:
- i) In InterDigital's initial offer to LG in 2010, LG were offered a prepayment discount of 35% and time value of money discount of 14%.

Mr Bezant noted these in his report and declined to use them since they were offered 7 years prior to LG 2017. Instead, he applied a FF discount of 12% (4% pa up to a maximum of 20%) and a Time Value of Money discount of 10% pa.

- ii) In 2011, InterDigital offered the following discounts from the 3G/4GMM rate of 2.5% of deemed price in the 'China rate': 2G 20% discount, 3G 10% discount, 4G no discount.
- iii) In October 2013: InterDigital offered a 40% discount for Lenovo's sales worldwide resulting in the following reduction in rates: 4G 2.5% to 1.50%; 3G 2% to 1.2%, in conjunction with reduced caps and floors.
- iv) In its slide deck dated 14th March 2018, InterDigital gave an example of a prepayment discount of 20%.
- v) In September 2018, Lenovo suggested certain unspecified discounts for (a) structuring the deal as a loan rather than as licence payments and (b) a long term deal.
- vi) Slightly later in 2018, InterDigital offered a 40% discount for HEVC and Wi-Fi if bundled with a cellular licence.

MY ANALYSIS

516. One might get the impression from Mr Bezant's application of the various 'assumed' discounts in his analysis (summarised in his Table 5-3) and his identification of the exact discounts for which Lenovo was 'eligible' (5% regional sales mix discount, based on a 50% reduction in rates for China-only products, 5% term discount and 5% volume discount) that all these discounts were applied uniformly and in a uniform fashion by InterDigital. Although I recognise that my ability to investigate this fully was (thankfully) hindered by the sensible case management decision by Birss J that there was to be no disclosure of the entire negotiating histories of each of the pleaded comparable PLAs, from the evidence presented in InterDigital's witness statements I remain far from convinced that all of the discounts assumed by Mr Bezant were actually applied. One might say that the volume discounts could and perhaps were specified from the two tables and so one could be tempted to say they were 'applied'. However, it is important to keep in mind that these volume discounts were 'applied' to InterDigital's 'program rates' which were paid only by the smallest and least sophisticated licensees.
517. Overall, I formed the view that all the possible discounts referred to represented a series of levers which InterDigital could and did utilise, as they saw fit, in an effort to secure a deal within the constraints which they perceived to apply to their licensing efforts (in particular, the lack of a global dispute resolution procedure and the effect of limitation periods). In saying this, I should not be taken to be criticising InterDigital for doing this. InterDigital were operating a licensing business and it was important for the continuing operation of the business (and its R&D) to ensure it received licensing income and these levers had to be applied in order to achieve this. This is one of the facts of life for SEP

licensors operating in a market where the appropriate licence rates have yet to approach any sort of equilibrium.

518. These ‘other discounts’ received far less attention than the volume discounts. For example, there was no examination of whether the size of several of these other discounts was economically justified. For that reason, I can and should deal with the discounts (other than volume) listed by Mr Grewe in his second witness statement more briefly. It will be noted that some of the discussion above also embraced these other discounts.
519. I have concluded that discounts which reflect the time value of money (e.g. accelerated receipt of royalties, the advantage to the SEP licensor of receiving a lump sum and so forth) are entirely fair and consistent with FRAND. Any other discounts (i.e. which do not reflect the time value of money) which were ‘assumed’ by Mr Bezant to have been applied I put in the same category as the volume discounts because, it seems to me, they were used, along with the volume discounts, to shore up the InterDigital ‘program rates’ and therefore contribute to the discrimination against smaller licensees. Again, I emphasise I have formed no view as to whether the size(s) of InterDigital’s other discounts were justifiable.

3) Do Limitation Periods have a role to play?

520. The combination of (a) Meade J’s analysis of the clause 6.1 undertaking, as summarised above and (b) the additional considerations drawn from the ETSI materials which I identified above leads me to the following conclusions.
521. In an ideal world, a willing licensee would agree FRAND terms before starting to use the relevant SEP technology and so would pay FRAND royalties from the outset of its use of the SEP technology. The ETSI materials recognise that FRAND terms may well not be agreed until later, reflected in the suggestion that the willing licensee nonetheless makes provision for the likely sums which will have to be paid in due course, setting aside those sums either actually or notionally.
522. Before FRAND terms are actually agreed and FRAND royalties are paid, the willing licensee would recognise that it has the benefit of the use of those monies in the meantime. That benefit may be significant, depending on the amount of time which passes, commercial rates of interest and the licensee’s costs of capital.
523. I am aware that limitation periods vary. Many countries have a 6-year period (and prevent the recovery of damages in respect of acts done prior to the period in question) others (e.g. China) have a 3-year period (and I note Chinese limitation appears to be more extensive, preventing even the establishment of a legal right outside the period) and no doubt there is additional variety around the world. The issue is whether limitation periods have a role to play when it comes to assessing what a willing licensee and a willing licensor would agree.
524. At paragraph 773 below, I mention some further analyses which I asked the experts to carry out, and some further submissions which the parties filed on

those further analyses. Although this was not the purpose of those further submissions, Lenovo took the opportunity to object to the notion that any value should be attributed in a past release payment to Lenovo's sales prior to Q3, 2013 (i.e. more than 6 years prior to the commencement of this action).

525. Lenovo contended that proceeding in this manner would be:

- i) Contrary to the evidence of Mr Brezski as to how InterDigital values past releases and therefore discriminatory against Lenovo.
- ii) Contrary to industry practice as embodied in the comparable licences.
- iii) Contrary to the approach taken by InterDigital in the proposals made to Lenovo in 2018 (and subsequently withdrawn).
- iv) Unsupported by Mr Bezant's calculations and approach, which took a period back to Q3, 2013, and therefore contrary to the evidence on both sides in the case.
- v) Unsupported by any evidence of the composition of the InterDigital portfolio at the relevant times in the past.
- vi) Contrary to, and in disregard of, the right to rely (and the effect given in practice in FRAND negotiations) on limitation periods globally in a manner which would deprive potential licensees (and Lenovo in particular) of legal rights arising under the laws of various countries, in circumstances where there was at no time any impediment to InterDigital pursuing such legal remedies at a much earlier stage.
- vii) Contrary to the approach mandated by the US constitution in determining and requiring FRAND payments which (in so far as they take account of past sales) mean that such can only be done (save by agreement) by a jury.

526. These submissions appear neatly to encapsulate Lenovo's objections to the idea that limitation periods do not have a role to play in the relationship between willing licensor and willing licensee.

527. I have already considered Mr Brezski's approach and evidence at length, which embodies the 'industry practice as embodied in the comparable licences'. I have also considered Lenovo's consistent refrain of discrimination. I am unimpressed by the third and fourth points, not least because I reject Mr Bezant's approach. The fifth point is exaggerated since there is such evidence even if it is not particularly detailed. The sixth point is one to which I had already given considerable thought before I received this submission and I have reconsidered the issue again. The seventh and final point has no application in this jurisdiction.

528. Having given this issue considerable thought, I have reached the conclusion that limitation periods do not have a role in the relationship between willing licensor and willing licensee and, indeed, that they are inconsistent with that

relationship. As I have explained above, a willing licensee will, notionally or otherwise, set aside funds to pay for its licence. If, for some reason, those willing parties are not able to reach a deal for some time (assuming the negotiations last for longer than 6 years), I do not believe that a willing licensee would refuse to pay whatever licence fees were eventually determined to be applicable in respect of units produced and sold more than 6 years prior to the determination. A licensee who did that would no longer qualify as 'willing'.

529. In my view, a willing licensee would not seek to benefit from delay in agreeing FRAND terms or payment of FRAND royalties. Thus, I have concluded that a willing licensee will pay in respect of all past units. Specifically, I do not consider that a willing licensee would seek to avoid making payments of FRAND royalties by taking advantage of one or more national limitation periods. The willing licensee would say: 'I have set these monies aside to pay to the SEP licensor(s) and I will pay them over just as soon as the appropriate rates have been agreed or set'. If the position was otherwise, that would automatically insert into the process (and FRAND is a process) an on-going perverse incentive to delay the agreement or setting of FRAND terms for as long as possible i.e. the longer the delay, the less the licensee has to pay. This cannot be FRAND.
530. I recognise that there are well-founded policy reasons which lie behind the imposition of national limitation periods but, in my view, those reasons are not sufficient to override or alter the fundamental relationship of willing licensor and willing licensee established by ETSI clause 6.1. Furthermore, my attention was not drawn to any decision to the effect that French law requires that account should be taken of limitation periods. As I have indicated, the ETSI materials indicate (at least to me) that they should not.
531. Limitation periods in the UK Limitation Act 1980 are expressed by reference to the type of cause of action. For example, section 2 provides that 'An action founded on tort shall not be brought after the expiration of six years from the date on which the cause of action accrued'. Section 5 contains almost identical wording in the context of actions founded on simple contract. I have already mentioned what appears to be the single provision in Chinese law which applies across the board. This type of action is something of a hybrid, in the sense that in form this action is an action in tort for patent infringement, but the primary aim is to enter into a contractual arrangement on FRAND terms, with both sides invoking and relying upon the Claimants' undertaking to ETSI to licence each of its SEPs on FRAND terms.
532. If a Defendant to this type of action does not want to invoke the Claimant's undertaking to ETSI, then, assuming one or more SEPs have been found to be valid and essential, the Defendant is highly likely to be subject to an injunction to restrain further infringement in the future and to have to pay damages in respect of past infringements. Assuming also that the Defendant has pleaded limitation as a defence, damages will only be recoverable for infringements committed within 6 years of the date of the claim form. Limitation is applicable in those circumstances because the Defendant has turned its back on entering into the relationship of willing licensor and willing licensee.

533. By contrast, if the Defendant does wish to invoke the Claimant's undertaking to ETSI, then, howsoever the action is characterised, the relationship invoked (that of willing licensor and willing licensee) is central. It is that relationship, in my view, which takes this type of action outside the normal realms of actions in tort or contract where limitation applies. It is that relationship which is inconsistent with one party in these circumstances being able to rely on limitation defences.
534. Finally, none of the points raised by Lenovo in its January 2023 submission dissuade me from this conclusion.
535. I recognise there may be a countervailing argument to the effect that eliminating limitation periods may, in certain circumstances, give SEP licensors a perverse incentive to wait to see what an implementers' actual sales have been and then licence retrospectively. Although I very much doubt this will be a real problem in practice (not least for the reason given by Mr Brismark in his third report at paragraph 23), but if it does transpire, there are two possible solutions: first, the Court may think it right to withhold an award of interest on past royalties and second, if thought appropriate, it would be open to ETSI to refine its rules to specify that after a certain length of time, it is no longer necessary for a willing licensee to account for past sales if the licensor has been particularly dilatory in seeking payment of such royalties.

4) How to eliminate or discourage hold-out

536. The analysis above ties in with the approach of Meade J. in *Optis F*. Of course, the reasons why a SEP owner and an implementer have failed to agree on FRAND terms may be numerous and varied. The blame may attach wholly to one side or the other, but in most cases, the blame is likely to be shared. However, whatever the situation as regards blame, at least under the procedure adopted in these UK FRAND cases, the parties will reach a point where the Court decides that the implementer infringes a valid SEP.
537. At that point (at the very latest), the implementer (it almost invariably is the implementer) must be put to his election: either cease infringement of the SEP found to be valid, infringed and essential to the standard in question (and pay damages for the prior infringements) or take a licence.
538. At that point, a FRAND licence *must* be available for acceptance by a willing licensee – that must follow from the irrevocable undertaking given by the SEP owner. It seems to me that however unwilling an implementer may have been in the past, at that moment, with a suitable change of heart, the implementer retains the ability to change its position to that of willing licensee. At the same time, it seems to me to be axiomatic that the willingness must be unconditional, and the grant of a FRAND injunction will ensure that is the case at least so far as the immediate present and future are concerned.
539. I should point out that both sides proceeded on the basis (as was decided in UP) that a FRAND licence would be a global licence to the SEP portfolio held by InterDigital. I note that Lenovo's original arguments for carve-outs, relating to the proceedings in the USA and China, implicitly recognised this.

540. So far as the past is concerned, the implementer (whether a willing licensee throughout or newly reformed) ought not to be rewarded for the delay which has occurred between the start of its infringements and the taking of the FRAND licence. I note also that it should not actually matter who caused that delay: whether it was the SEP owner, the implementer or the combination. Elimination of any reward for delay can be achieved via the terms of the FRAND licence, which will require the implementer to pay at FRAND rates for a retrospective licence to cover past infringements. This may be characterised as the price which the implementer must pay for the late change of heart and to be able to take the FRAND licence. However, a more satisfactory explanation, in my view, is provided, once again, by the concept of the unconditional willing licensee. To achieve that status, the implementer cannot impose any condition regarding the past. The implementer must present itself as a willing licensee and prepared to accept that status and its consequences at all material times (irrespective of any past conduct which was not consistent with the status of willing licensee).
541. I can illustrate this point with two or three examples which, in my view, also reinforce the point I made above that the willing licensee would not invoke national limitation periods.
542. First, let me assume an implementer who, at the point when he has been found to infringe a valid SEP, says ‘I am a willing licensee from this point onwards, therefore I am entitled to a FRAND licence, but I refuse to pay for any past infringements.’ It is easy to see he is not in truth, a willing licensee.
543. Second, let me assume an implementer who, at the same point, says ‘I am a willing licensee, entitled to a FRAND licence, in respect of which I will pay future royalties and for X years in the past, even though I accept I have been using the SEP technology for X+ years. In reality, whether X is specified to be 3 years, 5 ½ years, 6 years, against X+ being, say 5 years, 13 years or 8 years, is purely arbitrary. Other SEP licensees who have paid FRAND royalties (or in the range) over these periods would say, why should he get away with not paying royalties?’
544. In reaching this conclusion I have not lost sight of Mr Djavaheerian’s criticism of the equivalent aspect of InterDigital’s 5G Extended Offer, where, as I understand it, *all* past sales are to be paid for at the same rate as is applied to future sales (albeit that this includes a 5% term discount and a 5% regional sales mix discount). Mr Djavaheerian’s complaint was that this term discriminates against Lenovo relative to other licensees because those other licensees have received either a complete past release or a heavily discounted past release. InterDigital’s response to that complaint, as I understood matters, was that Lenovo forfeited any right to a discounted past release because it failed to agree a licence deal.
545. Mr Djavaheerian’s argument, taken to its logical conclusion, is that Lenovo is entitled to be treated as the most favoured licensee. There is nothing to commend or require that result. In any event, that type of argument should not and does not deter me from concluding what is FRAND, even if (and particularly if) I conclude that the licensing structures applied to date are not

appropriate to be adopted in what I determine to be FRAND. I recognise that what I decide in this case may well cause InterDigital and its licensees to change the way they calculate applicable rates, but that is not a reason to deter me from what I otherwise decide to be FRAND in this case.

**5) The treatment of and InterDigital's discounting in relation to past sales.
Should interest be awarded on past royalties?**

546. I have already addressed the treatment of past sales and InterDigital's discounting and note that they represent the part of the analysis where it seemed to me InterDigital's subjective views had the greatest effect.
547. The remaining point about sums due in respect of past sales is whether to make an adjustment for their present value. It is, of course, absolutely standard in litigation to award interest on sums which should have been paid in the past. In Mr Meyer's cross-examination, attention was drawn to a footnote in Mr Bezant's fourth report (where he was explaining how he calculated the lump sum in respect of InterDigital's 5G Extended Offer). Mr Bezant noted that '*In principle, past royalties should be converted to present value using a relevant interest date to reflect the time value of money. However, in practice, [InterDigital] has not done this in its prior licence agreements.*'
548. In this case I was struck by the fact that neither expert included any interest on past 'royalties'. This is such an obvious point that I concluded that the absence of any consideration of interest must have been deliberate. Once again, I have concluded that the experts had different reasons for not including interest. So far as Mr Meyer was concerned, he may have not included interest because it did not feature in InterDigital's licensing, and the heavy discounting in relation to past sales makes interest largely irrelevant. I also observe that the inclusion of interest on past royalties would have been against Lenovo's interests. So far as Mr Bezant was concerned, his footnote reflected the fact that he was diligently applying what is set out in the fact evidence as to InterDigital's practices. Another possible reason was because his approach was very much concentrated on future rates.
549. For a considerable time I was resistant to the notion of awarding interest, largely because InterDigital had not asked for it (and I infer they did not ask for it because it did not fit with their whole approach) and provided me with no data as to what appropriate rates might be. When I say 'InterDigital had not asked for it', I mean that it did not play a part in Mr Bezant's analysis. The Re-Re-Amended Claim Form does feature the usual paragraph seeking interest, but in three places, and in each context, it is interest on damages or an account of profits. Outside those three contexts, the claim I am determining is in paragraph (5): a determination of the FRAND terms for the licensing of the Patents.
550. There are countervailing considerations. On one view, an award of interest on past royalties is consistent with the relationship of willing licensor and willing licensee because the willing licensee has had the use of the money in the meantime. An additional consideration is that an award of interest will act as yet a further disincentive for hold-out and delay. The willing licensee can insulate itself against the effects of interest by making payments on account to

the willing licensor, who will accept them as a credit against the sums finally agreed or determined to be due.

551. On the other side of the argument are these related points. First, if the willing licensor and willing licensee are converging upon and agreeing a single per unit rate over the entire term, one of the many factors they would take into account would be the licensee's use of the money until terms were finally agreed. This would be more likely to occur if, as has been the case until recently, interest rates remained low. Second, an award of interest is redolent of a claim for damages, whereas the agreement of a FRAND rate is different in some fundamental respects.
552. When the experts provided me with the calculation model I requested (see paragraph 804 below), Mr Bezant added that the model could be adapted to include interest. Since I remain undecided on the issue, on hand-down of this judgment, I will hear submissions as to whether I should award interest and at what rate(s).

6) The role of subjective and/or ex post facto views, more generally

553. I have already noted several respects in which Mr Bezant's analysis and InterDigital's case depends on InterDigital's subjective view of the PLAs it has entered into. Although some of these subjective views were formed at or near the time of a PLA (e.g. InterDigital's 'recognition' of sums which they attributed to past sales, and, it is likely, at least some of the discounts which InterDigital had decided upon internally) I remain unconvinced that other subjective views were held within InterDigital at the time PLAs in question were entered into, and in particular any notion that the various discounts applied by Mr Bezant were applied across the board in a uniform fashion. It is far more likely, in my view, that most of the evidence about the PLAs, both from InterDigital's fact witnesses and from Mr Bezant constitutes an *ex post facto* attempt to rationalise the differing terms of the PLAs in an attempt also to persuade the Court that all the PLAs are the result of a structured, uniformly applied licensing programme.
554. Although clearly there was some structure to InterDigital's approach to licensing, in that, for example, they started from headline rates and had the RIM volume discount table, later replaced by the tax table, and the amount of structure certainly appears to have increased over time, overall I formed the view that the overriding consideration for InterDigital in negotiating and agreeing PLAs was to achieve the maximum money from the licensee (whether by way of lump sum or running royalties). This should not come as a surprise, because it was a perfectly logical business approach, in which InterDigital used many different ways of structuring deals to achieve a result which was acceptable to each side. At the same time, I recognise that the overriding consideration for each licensee is to pay as little money as possible for the licence. Overall, and for various additional reasons relating to more detailed points which I set out below, I do not consider InterDigital's approach was FRAND. Although Lenovo were keen to make the submission that InterDigital did not seek to defend its earlier offers to Lenovo as FRAND, InterDigital reminded me that they stated their case by reference to the 5G Extended Offer

and the January 2020 Offer in the interests of procedural economy and proportionality, without prejudice to their position that any of their other offers was consistent with FRAND. On my findings, this does not make any difference.

555. A major contributor to InterDigital being able to pursue this approach of trying to obtain the maximum return from each PLA was the lack of transparency as regards its licensing. InterDigital's transparency initiative resulting in the publication of its rates on its website from January 2020 was to be welcomed, but in my view, it does not go nearly far enough and did not result in a transparent licensing programme. For example, although the availability of various discounts is mentioned on the website, their terms are not specified.

THE EFFECTS OF MY FINDINGS ON THE POINTS OF PRINCIPLE

556. My finding that limitation periods have no role in the relationship of willing licensor and willing licensee has a profound effect on the analysis. Not only must Lenovo pay in respect of its past sales, one of the other consequences is that the two principal reasons which I have been able to discern as prompting the practice of heavy discounting of past sales have now been removed. This Court is able to determine FRAND rates on a global basis.
557. The second key finding relates to certain discounts. Again, for the reasons explained above, I have found that the scale of the volume discounts assumed to have been applied by InterDigital resulted in discrimination. Those assumed discounts in Mr Bezant's analysis were used to artificially inflate the future rates which he derived from the LS PLAs.
558. As for the other discounts listed in Mr Grewe's second witness statement and enthusiastically applied by Mr Bezant (whether there was evidence that all of them had actually been applied by InterDigital in any particular PLA), the discounts which I find were consistent with FRAND are those which relate directly to time value of money considerations. From this point on, I will use the shorthand 'the assumed discounts' as a catch-all of all the discounts which I have found do not have a role in a FRAND analysis. Discounts concerned with the time value of money are explicitly not in the category of 'the assumed discounts'
559. All these assumed discounts were also used by Mr Bezant and InterDigital in their attempts to shore up and/or support their 'program rates' as existed from time to time. The corollary is that the InterDigital 'program rates', even those published in 2020, are not realistic indicators of FRAND rates for their SEP portfolio.
560. The third key finding is that it is necessary to set on one side any subjective views from either SEP licensor or SEP licensee. In the unpacking analysis, virtually all these subjective views came from InterDigital. In their place, the Court must employ only objective measures.
561. The combination of these three findings gives rise to a number of beneficial effects.

562. First, the limitation finding should also have the beneficial effect of removing the perverse incentive on implementers to string out licence negotiations for as long as possible, whether they succumb to that incentive or not.
563. Second, the elimination of InterDigital's subjective views, along with the limitation finding, allows me to set on one side the subjective decisions made by InterDigital as to what proportion of a lump sum which they received to attribute to the past and future.
564. Third, in turn, that allows one to avoid any artificial inflation of future rates.
565. Fourth, all three findings allow me to revert to/employ the objective measure of any PLA, favoured by the licensee in question and also favoured by other implementers wishing to understand at least something of the rates implied by recent PLAs with this SEP licensor, namely what was the total sum paid, which can be divided by the observer's best estimate of the number of units covered by the deal to calculate, on a rough basis, the kind of rate implied by the PLA.
566. Fifth, the more that those in this market can find reliable indicators of the rate implied by PLAs, the greater the transparency in the market, a much-needed commodity.

7) Is the effect discriminatory against Lenovo?

567. I have already touched on this point above, not least because none of these topics are entirely separable. However, the findings I have made on the points of principle above and what I have also found to be their beneficial effects, require me to address a point made by Lenovo at several places in the different analyses. One of Lenovo's fairly constant refrains was to the effect that if this Court takes an approach which is different from the current practices in the SEP licensing market, it will represent discrimination against Lenovo. This submission was made with particular force in Lenovo's opposition to the idea that it would be FRAND for Lenovo to pay royalties on sales made in the periods before the UK limitation period. I do not accept that refrain or the specific submission for a number of reasons.
568. First, to accept it would solidify the existing practices. In certain respects, as I have explained, the existing practices seem to me to be based on flawed premises. To adopt them would greatly inhibit the ongoing development of FRAND in SEP licensing. It is far better, in my view, to expose the flawed premises, to correct them and to reach a determination of FRAND terms which is nonetheless consistent with what other similarly situated licensees are paying in respect of the InterDigital portfolio. That is what I intend to do.
569. Second, and relatedly, the allegation that any departure from existing practices will result in discrimination is far too crude and is, in fact, a non-sequitur. The allegation fails to take any account of what I decide is a FRAND approach. Furthermore, the findings and the approach I take in this judgment may well cause particular licensees to wish to change the terms on which they are licensed or to argue, upon renewal, for a different approach. That, however, is all a necessary part of the development of SEP FRAND licensing. Furthermore, as

indicated already, it remains entirely feasible to correct the flawed premises to reach a determination of FRAND terms.

FRAND – LICENSING TERMS

THE GENERAL FEATURES OF THE LICENCE REQUIRED BY LENOVO

570. Lenovo submitted that the licence they required from InterDigital had the following major features: (a) a global licence; (b) under InterDigital’s 3G, 4G and 5G portfolios; (c) with Lenovo-Motorola, a major global handset/smartphone supplier; (d) covering more than a decade of past and future global sales through to the end of 2023 and therefore (e) involving payment for between 622-686m units of which 73%-81% are past sales.
571. In broad terms, I did not understand InterDigital to dispute these general features, although, as the trial progressed, it appeared to me that InterDigital had begun to sense there was room for debate over how far back the Court could reach on past sales.

THE CASES ON COMPARABLE LICENCES

572. I can now return to consider the parties’ respective cases on the comparable licences. To recap, the sets of licences chosen by each side as comparables did not coincide at all.
573. For its part, Lenovo relied upon a ‘basket’ of what it called the ‘six most probative comparable licences’, which extended to seven with the late inclusion of Huawei 2016 (**the Lenovo 7**). These seven were Samsung 2014, Apple 2016, Huawei 2016, LG 2017, ZTE 2019, Huawei 2020 and Xiaomi 2021. By the time of closing arguments, Lenovo’s primary case was that each of the Lenovo 7 were obviously the most probative licences in this case.
574. In its FRAND Statement of Case, InterDigital originally selected 15 of its previous licences as comparables, that figure rising to 20 by amendment – the InterDigital 20. Notwithstanding the pleadings, Mr Bezant was supplied with a total of 68 InterDigital PLAs from between 1994 and 2021, each covering at least one cellular standard but in his reports he analysed some 27 licences (as set out below) which included the PLAs selected by each side. Overall, the 27 PLAs covered a range of dates from 2010 through to 2021. The six originally selected by Lenovo are highlighted.

No.	Licensee
1	NEC (2010)
2	Quanta (2010)
3	Acer (2011/2012)
4	Quanta (2012)
5	Wistron (2012)
6	Panasonic (2013)
7	RIM (2013)
8	Samsung (2014)
9	Apple (2016)
10	Huawei (2016)
11	NEC (2016)
12	Sharp (2016)
13	LG (2017)
14	Panasonic (2017)
15	Wistron (2017)
16	Fujitsu (2018)
17	Kyocera (2018)
18	Pegatron (2018)
19	ZTE (2019)
20	Asustek (2019)
21	Fairphone (2019)
22	Innovius (2019)
23	Huawei (2020)
24	Blu (2020)
25	Doro (2020)
26	Sharp (2021)
27	Xiaomi (2021)

575. However, the principal distinction between the two groups can be demonstrated by considering the total cellular units and the total cellular royalty payment made by each licensee. For this purpose I set out below two extracts from a table presented by Mr Meyer (in Meyer III) which show the total cellular units covered by each licence, the total cellular payment and what he called the ‘Effective Per-Unit Rate’ which is the product of the total payment divided by the total units in each case (i.e. it is a blended rate which applies both to any past units and future units). For present purposes, what he presents as the Weighted Average Per-Unit Rate (which I consider below) can be ignored.

Additional Note: For the reasons explained in my Judgment on Confidentiality Issues [2023] EWHC 1577 (Pat) at [23], I declined to unredact the effective per unit rates in the table below, even in a randomised and anonymised presentation. However, I can give an indication of the range in the rates involved by reference to the upper and lower bounds of Mr Bezant’s effective per unit rates, as presented by Mr Meyer which I did not accept. Mr Bezant had two rates at \$0.52, with the lowest rate at \$0.11.

Licensee	Total Cellular Units Covered by License (M)	Total Cellular Royalty Payment (M)	Effective Per-Unit Rate
1 Samsung (2014)			
2 Xiaomi (2021)			
3 Huawei (2020)			
4 Apple (2016)			
5 LG (2017)			
6 Huawei (2016)			
7 ZTE (2019)			
Subtotal: Lump Sum Agreements / Weighted Average Per-Unit Rate^[1]	8,446.2	\$1,698.82	\$0.20

576. In another part of his evidence, Mr Meyer estimated that the 6 licensees and 7 PLAs selected by Lenovo accounted for 78% of InterDigital’s total revenue in 2020, nearly 98% of cellular units licensed by InterDigital and nearly half of the total handset units sold globally over the period from 2013 to Q2, 2021.

577. By contrast the equivalent numbers for the following 15 PLAs (out of the InterDigital 20) are as follows: (*but note the randomisation in this version*)

8 Sharp (2016)		\$1.32
9 RIM (2013)		\$0.70
10 Kyocera (2018)		\$0.13
11 Blu (2020)		\$2.20
12 Innovius (2019)		\$0.65
13 Acer (2011/2012)		\$1.72
14 NEC (2010)		\$0.79
15 Fujitsu (2018)		\$1.44
16 Doro (2020)		\$0.85
17 Panasonic (2013)		\$2.24
18 Panasonic (2017)		\$1.26
19 Asustek (2019)		\$0.69
20 Sharp (2021)		\$1.65
21 NEC (2016)		\$1.99
22 Fairphone (2019)		\$0.11

*The order of the licensees has been randomised using a random sequence generator so that the ordering no longer accords with the public version of the Judgment dated 16 March 2023.

578. Mr Meyer did not include 5 of the InterDigital 20 in this table – Quanta 2010 & 2012, Wistron 2012 & 2017 and Pegatron 2018. I consider he had good reasons for excluding them. They were that (a) they did not make retail sales, being contract manufacturers for others (including Apple); (b) their sales did not feature in IDC data for handset and tablet sales; and (c) he considered that the limited SA data available for certain of these contract manufacturers was not sufficient to perform a reliable unpacking analysis of these agreements.

579. These 15 PLAs account for total cellular units of 195.9m units and total payments of \$208.18m. Thus, assessing the universe of the 22 PLAs, the Lenovo 7 account for 97.73% of licensed units and those 15 account for just 2.27%. A distinguishing characteristic of these 15 PLAs is that they are either running royalty or hybrid running royalty licences, whereas the Lenovo 7 are all lump sum licences.

580. I note that Mr Meyer presented in his Revised Table 17 a comparison between his figures for unit sales and total payments and those from Mr Bezant. There are some large disparities, the largest of which concerned RIM 2012. Mr Meyer's figures above contrast with Mr Bezant's total units of [RED]m and total payments of \$[RED]m.
581. Mr Meyer explained the reasons for these disparities in his second report. As Mr Bezant said in his first report, estimating the implied rates by standard for an RR PLA requires relatively few assumptions. Despite this, he went on to explain that he estimated LERs by dividing the PV adjusted expected consideration by the PV adjusted sales volumes (to calculate a per unit rate) or revenues (to calculate an *ad valorem* rate). Mr Meyer explained that to estimate the PV-adjusted sales volumes and revenues, Mr Bezant used sales forecasts from the time the RR PLAs were concluded, including where he has relied on sales forecasts included in an initial offer from InterDigital to the licensee in question. So, for RIM 2012, and for the period up to 2016, Mr Bezant used the sales forecasts set out in InterDigital's initial offer to RIM. After that, Mr Bezant used sales forecasts from the most recent IHS report prior to the execution of the PLA. Mr Meyer did not understand why Mr Bezant had used sales expectations in this way. Mr Meyer explained that the whole point of a RR PLA was so that both licensor and licensee insulated themselves from the risks of a LS PLA in which one side or the other suffers if the sales exceed or fall short of expectations. Mr Meyer characterised Mr Bezant's treatment of the RR PLAs as converting each RR agreement into a projected total lump sum payment, a process he said was completely unnecessary.
582. Mr Meyer singled out RIM 2012 as illustrating the impact of Mr Bezant's approach. Thus, Mr Bezant *estimated* that RIM sold 159.1m units and *assumed* that RIM paid \$267.44m in royalties, whereas RIM only sold 30m units during the term, amounting to \$66.4m in royalties. As Mr Meyer pointed out, Mr Bezant's methodology resulted in a tendency to over-estimate the number of devices to be sold under the PLAs and, for the RR PLAs, to overstate the implied effective per unit rate.
583. For the InterDigital 20, but leaving out the contract manufacturers, the respective figures (Meyer : Bezant) for the remaining 15 were:
- i) Total Cellular Units: 195.9m: 372.3m.
 - ii) Total Cellular Royalty Payment: \$208.21m: \$488.77m.
 - iii) Weighted Average Per Unit Rate: \$1.06: \$1.31.
584. The units to be covered in Lenovo's licence are, at minimum, 622.48m (derived from Mr Meyer's figures for the past (Q3, 2013 - Q4, 2020) 454.26m and for the future (2021-2023) 168.22m). Thus, in terms of total cellular units licensed, Lenovo would sit above LG in these tables and below Apple. The largest deal in the InterDigital 20 in terms of units covered was Sharp 2016 with [RED]m units. The Lenovo total units are almost 20 times the Sharp 2016 total.

585. In my view, it is clear that Lenovo's total cellular units under consideration are not comparable to the total units of any of the 15 PLAs originally chosen by InterDigital or any of the InterDigital 20. Indeed, Lenovo's units are more than an order of magnitude greater.
586. The combinations of total units, total payments and effective rates were also illustrated in another bar chart presented by Lenovo as document X1 during the cross-examination of Mr Bezant. I should add that this bar chart is based on Mr Meyer's calculations of his unadjusted weighted average per-unit rates for the InterDigital Declared Cellular SEP portfolio. Mr Bezant disagreed on many points in those calculations, and I do not accept a number of steps in Mr Meyer's adjustments, including his weighting process, but the detailed disputes do not matter for this purpose because Mr Bezant accepted the general picture which the bar chart presents, as do I.

[Diagram REDACTED, but this explanation added (adapted from [19] in the Judgment on Confidentiality Issues [2023] EWHC 1577 (Pat)):

This diagram was aptly characterised as the 'fjord' diagram. To explain: each license was represented by a bar, whose height was the unpacked per unit rate and width represented the volume of units under the license. The Lenovo 7 (all lump sum licenses) were depicted in various shades of blue, and the InterDigital 20 (all running royalty licences) were depicted in red. In the fjord analogy, the Lenovo 7 represented a depiction of the (more or less slightly undulating) sea and the InterDigital 20 represented a depiction of the side of a very steep fjord, the cliff going up in steps. These steps were very narrow because the volumes in the RR licenses were small. X1 remains a powerful illustration of the difference between the rates unpacked from the large lump sum licensees and the generally considerably higher rates paid by the much smaller licensees under their running royalty licences.

REDACTED]

587. Subject to an outlier (Blu 2020) representing the single low running royalty indicated at \$[RED], every other PLA in the InterDigital 20 implied royalty rates which were higher and, as indicated above, often significantly higher than the rates implied from the Lenovo 7.
588. Even looking at the rates calculated by Mr Bezant for each generation, it is clear that the rates for the InterDigital 20 are significantly higher than for the Lenovo 7. Taking Mr Bezant's 3G LER rates for each of the Lenovo 7, using the midpoint of the two ranges for LG 2017 and Huawei 2020, the simple average rate is \$0.79, whereas for the InterDigital 20, where 3G rates were stated, the simple average from 10 licences is \$1.16 or, excluding the outlier, the simple average from the remaining 9 is \$1.27. For 4G, the Lenovo 7 simple average is \$1.57 and, for the InterDigital 20, \$1.76 from 14 licences. For 5G, the Lenovo 7 simple average is \$2.17, but no 5G rates were specified in any of the InterDigital 20.
589. Before I come to consider the comparables in issue, there are some general features of the global market for mobile devices which should be kept in mind.

590. When a new generation technology is first available in consumer products, the prices are generally high. Early adopters pay a premium for early access. The initially high handset prices then tend to fall. Whether they achieve some sort of equilibrium price is difficult to discern, because the next generation technology then starts to emerge. Generally, take up of the next generation technology occurs more quickly than the previous generation. Thus, the point at which 4G sales overtook 3G sales occurred more quickly following the introduction of 4G than had occurred with 3G sales overtaking sales of 2G devices. Whether the same pattern is observed with 5G remains to be seen.
591. However, in very general terms, a plot of each generation of sales rises to a peak and then tails off. The plots overlap with each new generation taking over from the last.
592. This pattern of take up of new generation technology may be attributed principally to the major markets. In emerging markets, sales of earlier generation handsets continue for some years after the introduction of even the next and the following generation technology.
593. By way of example, although Lenovo first sold 4G handsets in 2011 those sales were dwarfed by the roughly equal sales of 2G (including 2.5G) and 3G handsets in that year. Lenovo's 4G handset sales really only took off in 2014, overtaking its 3G sales volumes in 2015. Although they peaked in 2015, they continued at just under that level for two more years, falling by about 5% in 2018 and by a further 5% in 2020. Although Lenovo's sales of 2G handsets decreased from 2007 onwards, it still sold 150K 2G handsets in 2017, with its last 40k 2G handsets being sold in 2019. Lenovo's 3G sales peaked in 2014, but it still sold 1.8m 3G handsets in 2017 and sold its last 13.5K 3G handsets in 2020, the year in which it sold its first 5G handsets and in a substantial quantity – over 1m.
594. In general terms, Lenovo's sales data reflects a longer tail of older generation handsets than other major market participants (Samsung in particular). This picture is consistent with the proportion of its sales made in emerging markets where it is reasonable to infer they account for at least a very significant proportion of its continuing sales of older generation handsets.
595. Lenovo also sold substantial volumes of cellular enabled tablets and personal computers – in several years in the millions of units – but, as one might expect, all these sales volumes were dwarfed by the handset sales. Even in its peak unit sales year of 2014, of the total unit sales of just over 100m, just under 95% was handset sales.
596. As I have indicated, the pattern of Lenovo's sales of different generation handsets differed from Samsung's, and other major market participants. Although there are some differences, the general pattern of LG's sales of different generation handsets was similar in that LG's 3G sales peaked in 2014, were overtaken by 4G in 2015 but a tail of 2G handsets sales continued into 2018. LG's 4G sales continued to grow after 2015, peaking in 2017, but falling quite fast after that.

597. In an ideal world and with considerably more detailed data than was available in this case, it would in theory be possible to determine rates for each generation of technology and to reflect what I perceive to be the changing value of each generation which reduces as further generations are implemented. Mr Bezant clearly attempted to derive rates for each generation but I was not persuaded his approach was reliable in view of (a) his adherence to InterDigital's licensing practices and (b) the differing bases he used to estimate the generational mix for each LS PLA.
598. Accordingly, I must do the best I can on the basis of the data available to me in this case.

THE LENOVO 7

599. In closing, Lenovo maintained their argument based on the 'basket' of PLAs from the big six licensees.
600. InterDigital put forward a series of arguments as to why the Lenovo 7 were not reliable comparables. Broadly speaking, these arguments appeared to me to have three aims: first, to dissuade the Court from placing any reliance on LS licences, and to prefer the RR licences; second, to cast doubt generally on the reliability of rates unpacked from the LS licences; and third, to suggest that, for various reasons, the rates implied from these licences were low.
601. These arguments were founded on various parts of Mr Bezant's evidence.
602. The first argument was that all these LS licences were 'intrinsically less reliable' and/or subject to 'estimation uncertainty' because of a need to estimate by standard rates and/or agreed on a 'different economic basis'.
603. However, it is not at all unusual to have to unpack lump sum licences in a FRAND case. Furthermore, as Lenovo pointed out, if lump sum licences were to be excluded, a skewed and misleading picture would be obtained. Excluding lump sum licences would exclude all licences with those in the top 20 handset suppliers. Fixed fee licences appear to be the norm for larger licensees. Furthermore, as the analysis in this case showed, lump sum licences tend to have lower effective rates so excluding them would lead to a higher range of royalties. Yet further, Lenovo did not accept that it is necessary to estimate by-standard rates in any event. For the reasons I set out later, I did not find it either necessary or fruitful to attempt to estimate by-standard rates in this case.
604. InterDigital's second point was that the six licensees in the Lenovo 7 received various discounts to which, they say, Lenovo is not entitled. Hence, so the argument goes, they do not qualify as comparables. I confess I do not really understand this criticism, bearing in mind Mr Bezant's elaborate analysis to reach his PDRs was designed to deal with all issues relating to discounts. I have addressed the knotty issue of discounts above. I reject the notion that the Lenovo 7 cannot be considered as comparables for the purposes of assessing the FRAND rate in this case.

605. InterDigital's third point is that the original 6 of the Lenovo 7 PLAs can be assumed to be 'depressed' or 'distorted' due to various factors, of which the common and most prominent factor was said to be hold-out. These arguments were conveyed in Mr Bezant's evidence. It is appropriate to deal with them in the context of each LS PLA below and then in my overall conclusions on this comparables part of the case.
606. In their closing, InterDigital also sought to argue that none of the Lenovo 7 were comparables because the effect of volume on price was effectively baked into each of those PLAs. InterDigital also argued that hold out has been what has driven the volume discounting. I will return to this topic below, after I have considered the specific points which Mr Bezant made in relation to each of the Lenovo 7.
607. At this point, it is sufficient to note that there was nothing in these points which I consider disqualify any of the Lenovo 7 from being considered as comparables.

THE INTERDIGITAL COMPARABLES

608. InterDigital's primary case remained that their pleaded selection of PLAs were the best comparables. However, as I have already indicated, InterDigital's fallback position was to place some reliance on LG 2017, although the unpacking of that licence maintained Mr Bezant's general unpacking approach.
609. I need not spend time rehearsing the reasons in detail why I concluded that the PLAs relied upon by InterDigital were not relevant comparable licences at all. The following points suffice.
- i) As can be seen from the tables set out above, the scale of the licensed business in each case was dramatically smaller than that of Lenovo, most by at least an order of magnitude or even two. As Lenovo pointed out, these much smaller licensees were at much greater risk of their licence rates being driven by the fear of litigation costs, as opposed to a rigorous valuation of the portfolio in question. In some cases (Wistron and Fairphone), the evidence established that the licensees took the deal on offer with no negotiation at all.
 - ii) Although the original 15 PLAs were agreed on a wide range of dates, a number are old and/or expired some time ago (NEC 2010, Quanta 2010, Acer 2012, Wistron 2012, Quanta 2012, RIM 2012, Panasonic 2013). Mr Brismark's evidence was that Ericsson updated their 'price list' on a regular basis. I also received evidence that InterDigital changed its licensing programme from time to time (e.g. with an announcement in 2020).
 - iii) Consistent with their age, the licences I have just mentioned were for 3G or 3G/4G only, with Blu being the single exception of a 3G/4G/5G licence.

- iv) In many cases, the licensee's business was largely or entirely confined to one country or region – Japan in the case of Panasonic, Sharp, NEC & Fujitsu; Western Europe for Fairphone; South America for Blu. The rate(s) agreed with a 'local king' in the Japanese market are unlikely to be a reliable guide for a global licence.
 - v) In several cases, the licensee had recently announced it was leaving the market or parts of it – Panasonic 2013, leaving the Japanese market, NEC 2016 (leaving the market entirely – the licence related to 800,000 units sitting in a warehouse), Panasonic 2017 (low end market in India), Fujitsu 2018 (sale to private equity). RIM 2012 – the RIM business was in serious decline. Asus 2019 – undergoing a strategic review.
 - vi) In three cases, the licensee had brought proceedings against InterDigital and was then given a 'settlement credit' which meant they did not have to pay the face value of the royalties in actual cash ([RED], [RED] [RED] and [RED]). As regards RIM 2012, RIM had been given a large royalty credit which it would lose if it did not enter into a deal.
 - vii) Five of the licensees operated in specialist segments of the market – Fairphone (user-repairable devices), Kyocera (ruggedised devices for specialist usage), RIM (high ASP business/enterprise devices), Doro and Fujitsu (feature phones for the elderly).
 - viii) Four of the licensees were either brokers or contract manufacturers (Innovius, Wistron, Quanta and Pegatron).
610. In addition to all those reasons, (a) the scale of the business licensed under each of the InterDigital 20 was dramatically smaller than that of Lenovo; (b) there are reasons to doubt the reliability of the implied rates derived by Mr Bezant from the RR PLAs, for the reasons explained in paragraph 581 *et seq* above, and (c) outside this litigation, InterDigital did not treat Lenovo as in a comparable position to any of the InterDigital 20. I realise, of course, that InterDigital were attempting to support their 'program rates' in negotiations with Lenovo, but it is notable that when InterDigital finally provided some information to Lenovo about other licensees, InterDigital provided information on Samsung, Apple, Huawei and LG (see paragraph 909 below).
611. Furthermore, the overarching reason for rejecting reliance on the InterDigital 20, individually or collectively, is because the Lenovo 7 were clearly far better comparables, with LG 2017 standing out as the best comparable.

INTERDIGITAL'S ALTERNATIVE CASE BASED ON LG 2017

612. I have already outlined how InterDigital's alternative case on LG 2017 emerged (see paragraph 387 above). As I mentioned, InterDigital submitted that Mr Bezant's figures on LG 2017 should be accepted '*at this stage*' by which InterDigital meant at the LER stage.
613. The relevant figures can be found in the entry for LG 2017 in CXX-PM-4 for LG 2017. It looks like this:

		Bezant Future Only LER (By Standard)			Meyer Future Only Effective End-User Rates (Blended)		Bezant PDR	
		Per unit	AV (actual ASP)	AV (limited ASP)	Source (tabs in Bezant 4 Appendix 32)	Per unit	Source	Per unit
LG 2017	3GMM				LG'17 cells C58:E60	0.61	Meyer 3, revised Table 46	0.66-1.33
	4GMM							1.34-2.73
	5GMM							1.61-3.27

614. Mr Bezant’s future only LER per unit rates are expressed in ranges, the top and bottom of which correspond (inversely) to the range of predicted future sales ([REDACTED]m units) in the side letter. The figures at the top of each range ([RED], [RED] and [RED]) are indeed to be found at cells C58-C60 in the LG’17 tab in Appendix 32. The 5G lower end rate can be found at Cell C413 (alongside the ad valorem rates), but I was unable to find the lower end rates for 3G or 4G. I think the reason why the 5G lower end rate can be found is because there were minimal sales of 5G units in the licence term. However, I will assume the lower end 3G and 4G rates are correct.
615. The next stage in the argument was that, due to the similarities between LG and Lenovo, the only adjustments which needed to be made were in respect of discounts for fixed fee and time value of money. These needed to be wound out because the Lenovo licence under consideration is so short as not to attract these discounts. So, the LG LER rates needed to be uplifted by dividing them by 0.88 (a 12% fixed fee adjustment) and 0.9 (a 10% per annum discount). The final step in the submission was to select a range, Low-Mid. Although not stated anywhere, the implicit submission was that this range was ‘conservative’.
616. In their written closing, InterDigital presented the rates they wished to carry forward from LG 2017 as follows. I set out the table from the written closing because these are the (ranges) of rates which InterDigital submit are applicable to Lenovo, although in the comparables part of the case, InterDigital did not make any submissions as to where in these ranges I should set the rate for each generation.

LG 2017	3GMM	Low: 0.49
		Mid: 0.81
	4GMM	Low: 1.01
		Mid: 1.67
	5GMM	Low: 1.20
		Mid: 2.00

617. The next reference to these rates came in the Top-Down cross-check. I pick up the thread in that part of the Judgment, see paragraph 847 below.
618. At this point it is convenient just to summarise the reasons why I find the ranges of rates which InterDigital derive from LG 2017 to have no validity.
619. The principal reason is because these are ‘future only’ rates (as confirmed in CXX-PM-4). They are therefore inflated by the distortion created by InterDigital’s subjective ‘recognition’ of a disproportionately low share of the lump sum consideration to past sales (itself a product of the perception that royalties for past sales would be difficult to recover, in part because of the perception that limitation periods would apply) and a disproportionately large share of the consideration being attributed to future sales. They may also be inflated by the lower figures which Mr Bezant employed for future sales, compared with Mr Meyer’s estimated figures for future sales.
620. I recognise of course that for part of his analysis, Mr Meyer used InterDigital’s apportionment of the consideration to past sales, as reported in their public filings. This resulted in his past (\$0.09) and future rates (\$0.61) derived from LG 2017. These are to be contrasted with his rate which blended past and future together - \$0.24. As I have endeavoured to explain, I find the blended rates to be much the best figures to use, not least because they reflect the type of analysis which third parties to the PLA are able to carry out in real life (provided the PLA is large enough to be the subject of public reporting).

MY ANALYSIS OF THE LENOVO 7

621. In their unpacking of the allegedly comparable licences, as I have mentioned, Mr Meyer proceeded on the basis of statements made by InterDigital in regulatory filings as to how InterDigital ‘recognised’ various sums as attributable to releases in PLAs for past sales. In relation to the Lenovo 7, only 3 featured releases for past sales: LG 2017, ZTE 2019 and Huawei 2020. Mr Meyer was of the view that these releases were well defined in the respective licences, in terms of defined time periods and units covered. This seems to be an uncontroversial point so far as LG 2017 and Huawei 2020 are concerned, but the experts diverged on ZTE 2019. I briefly summarise the position for each of these licences.
622. I must point out that at the end of each section, I set out the rates derived by each expert from the licence in question. Many of these rates underwent revision as each expert took some (but not all) points made by the other. The rates I have attributed to Mr Bezant are those shown in a document used in the cross-examination of Mr Meyer (CXX-PM-3 & 4) in which the figures shown are (mostly) supported by the identified sources. Although it is clear that Mr Meyer did not agree the figures attributed to Mr Bezant, and he was not asked to do so in the cross-examination, I consider this document usefully summarises Mr Bezant’s final position on the rates derived for future only LER and PDR.
623. I also point out that in his second and third reports, Mr Meyer attempted to find the reasons why Mr Bezant’s rates differed so much from Mr Meyer’s. Mr Meyer identified that for the Lenovo 7, the handset volumes used in Mr Bezant’s

analysis differed from those used by Mr Meyer. At paragraph 0 above, I set out Mr Meyer's Revised Table 8 in which he set out the percentage differences in volumes as follows: Samsung 2014, -0.4%; Apple 2016; +3.1%; Huawei 2016, -20.3%; LG 2017, -23.1%; ZTE 2019, -23.8%; Huawei 2020, -30.3% and Xiaomi 2021, +2.7%. The first two and the last differences are not material, but I considered the use of volumes which are lower by between 20% and 30% required investigation. I investigated those differences in paragraph 374 above. For the reasons set out there, I found Mr Meyer's approach to be the more reliable one.

624. I propose to deal with each of the Lenovo 7 in chronological order, drawing out the pertinent points. In doing so, I have not lost sight of the fact that, on Mr Meyer's analysis, only LG 2017, ZTE 2019 and Huawei 2020 were concerned with past sales. In addition, Mr Bezant analysed past sales from Samsung 2014, Apple 2016 and Huawei 2016, although the consideration he allocated to past sales in Samsung 2014 was miniscule (\$[REDACTED]m in the context of the overall LS paid of \$[REDACTED]m).

Samsung 2014

625. This PLA was entered into on 1 June 2014 with an effective date of 1 January 2013 through to 31 December 2022.
626. Mr Grewe said that Samsung was one of InterDigital's longest licensees, having taken at least 3 licences over the years, paying over \$1bn in fees. The previous licence expired on 31 December 2012. After lengthy technical discussions the parties began discussing financial terms in the autumn of 2012. Mr Grewe describes Samsung as having balked at the rates and fees which InterDigital was negotiating toward. Of course, if InterDigital had put forward its 'program rates', this reaction cannot have been a surprise. However, I rather doubt that InterDigital would have dared to put forward its 'program rates' to an entity as large as Samsung. Whatever the actual position, Mr Grewe says 'As a result, InterDigital included Samsung in a US ITC action' as from January 2 2013. By the time the PLA was agreed, the InterDigital trial had taken place and the decision was 'just around the corner' (in fact it was issued on 13 June 2014). Mr Grewe indicated that the purpose of the effective date of 1 January 2013 was to ensure that Samsung were 'continuously under license'. The past sales were treated the same as the current and future sales.
627. So, although Mr Meyer estimated there were sales of some [REDACTED]m units prior to the execution date of the PLA and unlicensed at the time, the parties treated them as licensed sales under the PLA. I believe this is why Mr Meyer considered this PLA did not involve any past sales, only future sales as from 1 January 2013.
628. The PLA is divided into two distinct payment periods of 5 years each, with an early termination option fee. For the first period, the total licence fee was \$[REDACTED]m, paid in 4 instalments: one initial instalment of \$[REDACTED]m followed by three instalments of \$[REDACTED]m each. For the second period, the total fee was \$[REDACTED]m, with an initial instalment of \$[REDACTED]m followed by staged payments of \$[REDACTED]m, \$[REDACTED]m and \$[REDACTED]m. The total consideration was \$[REDACTED]m.

629. In his first report, Mr Bezant assumed that Samsung would terminate early i.e. after the first five-year period. Mr Meyer was critical of this in his second report. He stated the consideration was clearly front-loaded, a feature which would penalise early termination. Indeed, Mr Merritt stated in his witness statement that the *‘economic terms were such that it was more advantageous for Samsung to not terminate the agreement and for it to extend for the entire 10 years, which is what Samsung elected to do.’* By the time of his Fourth Report in his Appendix 32 spreadsheet Mr Bezant had unpacked Samsung 2014 on two basis (early termination or not).
630. Once various corrections had been taken into account, the experts ended up with the following rates derived from Samsung 2014:
- i) Mr Meyer: Future (and Blended) rate: \$0.16.
 - ii) Mr Bezant: Although the licence covers 5G and 6G, there were no forecasts in 2014 for 5G let alone 6G sales. For that reason, Mr Bezant sensibly did not derive rates for those standards.
 - a) LER: 3G: \$0.13; 4G: \$0.32 (with early termination) and \$0.33 (without).
 - b) PDR: 3G: \$0.89; 4G: \$2.25 (with early termination).
 - c) PDR: 3G: \$0.94; 4G: \$2.39 (without early termination).
 - iii) Even before Mr Bezant applied what he considered to be the applicable volume and other discounts to calculate his PDRs, the discrepancies between the derived rates were very large. Mr Bezant’s rates (particularly if blended) are considerably higher than Mr Meyer’s rate.
631. At the end of his section on each PLA, Mr Bezant included a section under the heading ‘Factors affecting reliability and relative comparability’. I list here his points regarding Samsung 2014. Many of them were repeated in relation to others of the Lenovo 7.
632. His principal point was that Samsung was, in 2014, a very large vendor with over 22% of the world handset market and significant bargaining power. Mr Bezant says it was important for InterDigital to have large players sign up for cashflow reasons but also for the coat-tail effect. He suggests that InterDigital may have agreed to lower rates with Samsung in order to conclude the deal. He points out these considerations do not apply to Lenovo. Mr Bezant made the same point in relation to Apple 2016.
633. I recognise the desirability of InterDigital getting the largest market players signed up (Samsung and Apple, in particular), both for cashflow reasons and for what Mr Bezant called the ‘coat-tail’ effect – these deals would encourage smaller implementers also to take a licence from InterDigital.
634. Mr Bezant also listed seven other factors regarding Samsung 2014. Of these, the first two applied to all the LS licences and factors 3 and 4 applied to varying

degrees to all. Litigation as a backdrop also applied to many of the LS licences. Factors 5, 6 and 7 only applied to Samsung and I discuss these below:

- i) **Estimation uncertainty:** from assumptions as to how to apportion the LS between standards.
- ii) **Different payment structure:** but he made this point before InterDigital agreed to a LS determination for Lenovo.
- iii) **Past sales treatment:** Mr Bezant suggests that his analysis suggests that InterDigital agreed to lower rates on sales prior to the execution date. However, Mr Bezant's figures showed, in my view, an insignificant difference.
- iv) **Volume discounts:** essentially the difference between the volume discount of 80% provided to Samsung and the much lower volume discount available to Lenovo.
- v) **InterDigital's patent portfolio:** At the time, InterDigital had recently sold patents to Intel, hence the InterDigital portfolio was smaller than the portfolio to be considered for the Lenovo licence. Mr Bezant suggests that the rate may have been lower as a result. Although Mr Grewe referred to this sale of patents to Intel in his witness statement, he said that InterDigital took the position in negotiations with Samsung that the portfolio remained very strong and very large and that the Intel sale merely reduced the number of redundant patent assets with no effect on the overall value of the portfolio which would quickly be replaced by further R&D efforts. Later, Mr Grewe said '*The licence agreement with Samsung reflected its market position/dominance (being number one in the world), potential term, and the strength closing a deal with Samsung brought to InterDigital's licensing efforts/arguments.*'
- vi) **Licensing environment:** Mr Bezant refers to Mr Merritt's witness statement where he stated that the 'Samsung renegotiation occurred at a time when SEP holders were under the most pressure' and when he considered 'patent enforcement was challenging' (due to the lack of a single forum to resolve a patent dispute). Once again, Mr Bezant suggests this may have meant that InterDigital was willing to accept a lower rate, all else equal. Whilst Mr Merritt did say that, it is important also to note the counterpoints he mentioned in the same and the next paragraph. There, Mr Merritt referred to the ITC proceedings, explaining:
 - a) In ITC proceedings, exclusion orders were available covering the US market.
 - b) An exclusion order could be avoided if the manufacturer appeared to be a 'willing licensee'.

c) Mr Merritt acknowledges that Samsung made itself appear to be willing by ‘supposedly’ offering to pay approximately \$500m to InterDigital for a licence.

d) Mr Merritt then said:

‘131. ...Only when Samsung acknowledged, after prodding by InterDigital, that it was not actually willing to enter into such a deal, did the ITC staff conclude that Samsung may not be a willing licensee and could be subject to an exclusion order.

132. It was at that point that Samsung fully engaged on resolving the license dispute. In return, InterDigital looked at a 10 year structure and, applying higher discounts for the ten year period (given the uncertainty of Samsung maintaining its market position), and extending the volume discount table (as had occurred with Nokia in 2005 with the parties' arbitration) to reflect Samsung's much higher volumes we arrived at a mutually acceptable deal.’

e) To similar effect, Mr Grewe explained that at the time of the deal, InterDigital considered there to be a ‘reasonable possibility’ that they would succeed in obtaining the exclusion of all of Samsung’s standard-compliant products from the USA.

vii) **ITC proceedings:** Mr Bezant mentions those but also a Reuters report from December 2013 which related that the ITC had found that Nokia, Huawei and ZTE had ‘not violated’ certain of InterDigital’s patents, but it was under appeal. He said: ‘*It is unclear how the ITC proceedings would have affected the negotiations between IDG and Samsung and the rates agreed in the licence, but it may have meant that IDG agreed to a lower rate to conclude the deal, all else equal.*’

The evidence from Mr Merritt and Mr Grewe, quoted above, plus the fact that Samsung agreed the PLA just 13 days before the ITC decision was issued (which Mr Merritt strongly hints would have resulted in an exclusion order against Samsung cellular products from the USA), suggests to me that the ITC proceedings were seen by Samsung as a significant threat.

635. However, there is a general point to keep in mind when I review the points listed by Mr Bezant for each of the Lenovo 7. With perhaps one or two exceptions, his ‘Factors affecting reliability and relative comparability’ are either presented as neutral or as indicating that InterDigital had to accept a lower rate. Looking across his ‘Factors’ for the PLAs more generally, the same pattern is evident. I can illustrate this point by citing the ‘Factors’ Mr Bezant highlighted for one of the very smallest licensees, Fairphone 2020. Mr Bezant said that Fairphone’s market share in 2020 was about 0.004% by value. He continued:

‘Fairphone’s very small size meant it may have had low bargaining power to negotiate with IDG or challenge (via litigation) the rates offered by IDG. However, I have no evidence that the rates in Fairphone 2020 were not the result of thorough negotiations between the parties.’

636. The implication from that last sentence (along with the fact that Mr Bezant advocated reliance on Fairphone 2020 as one of the InterDigital 20) is that, notwithstanding its low bargaining power, the rates were within the FRAND range.

637. One of the few PLAs where Mr Bezant appears to acknowledge that the rates might have been too high was Wistron 2012, but apparently only because Wistron’s allegation to that effect was mentioned in the fact evidence. As Mr Meyer pointed out, Wistron (along with Pegatron and Quanta) was and is a contract manufacturer, producing cellular enabled products for other parties, employing a very different business model to the other licensees’ making sales to consumers. Mr Meyer dismissed these (along with Innovius 2019) as comparables, because the agreed rates would be ‘passed through’ to their customers. Leaving that point aside, in 2012, Wistron was a relatively small licensee but not one of the very smallest licensees: it had an implied market share of 0.03% by value. In her witness statement, Ms Mattis described how Wistron had a change of heart shortly after Wistron 2012 was signed. Wistron sought (unsuccessfully) to renegotiate the agreed rates (Mr Bezant’s LERs were 3G: \$[RED]. 4G: \$[RED]), the highest amongst all the comparables relied upon and way above the LERs for Samsung 2014: 3G: \$[RED]. 4G: \$[RED].

638. Mr Bezant identified **negotiating behaviour** as a factor regarding the reliability of Wistron 2012 as a comparable. Quoting from Ms Mattis, he described this factor as follows:

‘I understand that “*Wistron neither wished to discuss the technical issues nor the commercial offer in any detail ... they simply accepted the economic terms of the offer as made*”. This is not the case with Lenovo, which has been in discussions with IDG since around 2008. Early in the licence term, “*Wistron requested [IDG] enter into negotiation with regards to the rates because they said they believed the rates to be too high and that they should have negotiated prior to signing*”.

639. Notwithstanding these observations, Mr Bezant did not dismiss Wistron 2012, but instead was content to include it in his analysis.

640. Wistron’s next PLA was Wistron 2017. It is true that Mr Bezant’s LERs for this PLA were very considerably lower than in 2012 being 3G: \$[RED]; 4G: \$[RED]. Notably, Mr Bezant’s PDRs were the same, indicating that Wistron did not benefit from any discounts. Mr Bezant says Wistron’s market share in 2017 was 0.2% by handset sales revenue. He included a sentence almost word for word as the first quoted above for Fairphone and continued:

‘Wistron entered into a prior PLA with IDG in 2012, following brief negotiations. I understand that Wistron considered the rates agreed were too high and challenged them after the license was signed. Therefore, I consider it likely that Wistron negotiated thoroughly before agreeing the 2017 PLA.’

641. In view of the overall exercise in which Mr Bezant was engaged i.e. taking account of all of InterDigital’s subjective views of its PLAs and, in particular, assuming all the discounts which were potentially available were applied in a uniform fashion in order to derive his CBRs and PDRs, it is perhaps not a surprise that Mr Bezant was (unconsciously) programmed only to find downward pressure on InterDigital’s rates. I will draw attention to other examples amongst the Lenovo 7.

My analysis.

642. Reverting to my assessment of the reliability of Samsung 2014 as a comparable licence, I found some of Mr Bezant’s points unpersuasive. Furthermore, he seemed to me to be trying a little too hard to find reasons to suggest that InterDigital may have agreed to a lower rate. There are, however, indications that the Samsung 2014 rate was slightly low. I assess the situation as follows.
643. Prior to Samsung 2014, the largest InterDigital licence (on the data I have) was with RIM 2012 which resulted in a total royalty payment of over \$[RED]m, albeit it was a RR PLA. Samsung 2014 appears to be InterDigital’s first very substantial LS licence, with a total cellular royalty payment of around \$[RED]m, albeit on the basis of a 10-year licence.
644. Undoubtedly, each side faced pressure to reach a deal. In the ITC proceedings Samsung faced the prospect of having their products excluded from the US market. However, it was clearly very desirable for InterDigital to be able to conclude (and announce) that it had agreed a long-term licence with the market leader, albeit such a substantial deal came with a price because, as Mr Meyer said, it would be taken in the industry to establish some form of ‘market rate’ for the InterDigital SEP portfolio.
645. Overall, I incline to the view that the rates derived from Samsung 2014 were somewhat depressed by the factors I have just discussed, but also when viewed against the rates derived by Mr Meyer from Huawei 2016 and Apple 2016.

Huawei 2016

646. The precise status of Huawei 2016 was a little unclear. Originally, as I understand matters, in his first and second reports Mr Meyer derived his rate for Lenovo based on the Lenovo 6 (excluding Huawei 2016). In the end, Mr Meyer analysed Huawei 2016 and Huawei 2020, but with a preference for Huawei 2020. InterDigital were critical of Mr Meyer’s preference for Huawei 2020. Indeed, InterDigital criticised Mr Meyer for having left Huawei 2016 out of his analysis in his first and second reports.

647. Once various corrections had been taken into account, the experts ended up with the following rates derived from Huawei 2016:
- i) Mr Meyer: Effective per-unit rate for the future: \$[RED].
 - ii) Mr Bezant:
 - a) LER: 3G: \$[RED]; 4G: \$[RED].
 - b) PDR: 3G: \$[RED]; 4G: \$[RED].
 - iii) Before Mr Bezant applied what he considered to be the applicable volume and other discounts, Mr Bezant's 3G LER rate is in the same ballpark as Mr Meyer's rate, but a blended rate would be considerably higher. Overall, the discrepancies between the derived rates were large.
648. In terms of Mr Bezant's 'factors', the first three were the same as for Samsung 2014: **estimation uncertainty, differences in payment structure and volume discount**, but I must discuss two other points to which he drew attention: **regional rates** and **'negotiating behaviour'**. On the first point, in 2016, China accounted for 55% of Huawei's total sales. There is some background as to how the regional rate was arrived at. This also relates to the second point, which is really concerned with various pieces of litigation and other disputes involving these parties.
649. I have taken the relevant background partly from the witness statements of Messrs Grewe and Merritt and partly from some details given in the translation of the Judgment of the Guangdong High People's Court in *Huawei v InterDigital* in 2013.
650. The first meeting with Huawei took place in March or April 2011. Shortly after that, InterDigital filed the first of two complaints with the ITC (on 26th July 2011), along with an action for patent infringement in Delaware against Huawei and others (including ZTE). Huawei retaliated by (a) bringing proceedings in China against InterDigital and (b) lodging a complaint that InterDigital had violated China's Anti-Monopoly Law (AML) in relation to its licensing of its SEPs to Chinese companies. The AML complaint led to a formal investigation of InterDigital by China's National Development and Reform Commission (NRDC). This investigation was suspended in May 2014 based on commitments InterDigital had given to the NRDC.
651. In the court proceedings in China, Huawei sought a determination of a China-only FRAND rate for InterDigital's Chinese SEPs. The first instance court held, based on comparables from Apple and Samsung, that the appropriate rate for a China-only licence for InterDigital's SEPs was 0.019%. InterDigital's appeal against that finding was dismissed by the Guangdong High People's Court in 2013, but it is right to note two arguments made by InterDigital to me: first, it was argued that the 0.019% rate was unreasonably low because InterDigital was hampered by not being able to disclose confidential PLAs in those proceedings since (at that time, at least) no provision could be made in Chinese proceedings to protect confidential information; second, InterDigital pointed out that

subsequently, on appeal to the China Supreme People's Court, the judgment was effectively vacated.

652. Reverting to the history between Huawei and InterDigital, Huawei were persuaded to enter into a FRAND licence determination arbitration in late 2013, which resulted in a determination of FRAND terms and payment to InterDigital in 2015. Mr Grewe said that InterDigital were content with the outcome of the arbitration, which set a worldwide rate, but Huawei attempted to annul the award before the courts in Paris. The award was confirmed at first and second instance in Paris. On Huawei's further appeal to the Supreme Court, Huawei were required, as a condition of bringing the appeal, to pay the royalties due under the award.
653. Thus, Huawei 2016 was agreed against the backdrop of the arbitration award plus what Mr Grewe characterised as the 'very low' China-only rate of 0.019% (later vacated). Mr Grewe said the PLA recognised the payments made under the arbitration award (amounting to c.\$[RED]m), Huawei paid another \$[RED]m, a number of patents were transferred to InterDigital and a collaboration project was set up. Mr Grewe also stated that InterDigital *'reluctantly used the 0.019% judgment rate for China to inform the creation of the blended worldwide rate used to arrive at the lump sum in the agreement.'*
654. In his witness statement, Mr Merritt said Huawei 2016 was the first deal that InterDigital concluded with a Chinese manufacturer. He said it was a difficult experience, to say the least. He indicated that all these proceedings (including the NRDC investigation) had consumed and were continuing to consume time, cost and resources and InterDigital wanted to find a settlement in the form of Huawei 2016. Mr Bezant suggests that InterDigital may have accepted lower rates to conclude the deal. However, the rates derived by the experts from Huawei 2016 do not reflect that, in my view, even though they are lower than Apple 2016.

Apple 2016

655. The PLA was entered into on 8 December 2016, with an effective date of 1 October 2016 through to 30 September 2022. Apple agreed to pay a total of \$[RED]m in \$[RED]m instalments, the first within 10 days of execution of the agreement and then on each of 30 September in 2017, 2018, 2019, 2020 and 2021.
656. Apple had a long involvement with InterDigital, and had discussed a licence even before the world knew that Apple was going into the mobile phone business. Apple contacted InterDigital in 2006 and the first PLA was circa 2007 with a term which expired on [REDACTED]. There were several arbitrations under the 2007 licence over whether certain products were covered, but, as I understand the position, no litigation was necessary to drive the negotiations towards Apple 2016. Furthermore, the licensing position was complicated by Apple's use of suppliers licensed by InterDigital. Thus, it appears Apple 2016 was something of a reset, putting Apple first and foremost in the product chain, so that where contract manufacturers like Pegatron and Wistron manufactured for Apple, those products would be covered by Apple's PLA.

657. In its 2016 Form 10-K, InterDigital recognised \$141.4m of past sales associated with this agreement. To take account of the past sales, Mr Meyer did not include the first payment in his analysis and deducted \$141.4m from the 2017 payment. Mr Meyer's figures appear to indicate past sales of [REDACTED]m units, but he identified various reasons why he did not calculate a notional rate for the past, principally because, from the data he had available, he was unable to determine the number of past sales which were covered by InterDigital's agreement with Pegatron, one of the contract manufacturers for Apple. I have adverted above to Mr Bezant's criticisms of Mr Meyer's approach but I conclude it is sensible and reliable.
658. Once various corrections had been taken into account, the experts ended up with the following rates derived from Apple 2016:
- i) Mr Meyer (before his economic adjustments): Future sales only: \$[RED].
 - ii) Mr Bezant:
 - a) LER (Future sales only): 4G: \$[RED].
 - b) PDR (Future sales only): 4G: \$[RED].
 - iii) Although Mr Bezant's LER rate is not that dissimilar to Mr Meyer's rate, the discrepancy still requires an investigation as to why they are different. It seems to derive from the different approaches to past sales. I have summarised above the reasons why Mr Meyer did not derive a rate for past sales. For his part, Mr Bezant's analysis included [REDACTED]m units as past sales, at rates of \$[RED] for 3G and \$[RED] for 4G. That resulted in what I find to be an inflated future only rate (blended across 3G, 4G & 5G) of \$[RED]. His blended rate (past, future and 3G, 4G & 5G) was \$[RED] (without early termination).
 - iv) Overall, I proceed on the basis of Mr Meyer's rate.
659. As I mentioned above, Mr Bezant's reliability factors included the point that Apple was a large vendor with 11.5% of the worldwide handset market, with significant bargaining power. As with Samsung, he made the cashflow and coat-tail points, which led him to suggest that InterDigital may have agreed to lower rates.
660. His other points were: Estimation Uncertainty; Different Payment Structure, Past Sales Treatment and Volume Discount. He adjusted for the effects of the latter three points via his CBRs and PDRs.
661. Due to Apple's unique status in the market, I doubt that Apple 2016 is a useful comparable. The rate(s) derived from it may nonetheless be useful as indicating an upper bound. I doubt that Apple 2016 represents a depressed rate.

LG 2017

662. Although in the end both sides placed reliance on LG 2017 as a comparable, I must still analyse it carefully.

663. This PLA was entered into on 30 November 2017, effective from that date through to 31 December 2020, after a long period of negotiations – some 8 years. Mr Grewe described how LG’s previous PLA had expired at the end of 2010. InterDigital perceived that early negotiations were not making progress so they pulled LG into a 2011 US ITC action which already involved Huawei, ZTE and Nokia. LG managed to extricate themselves from that action on the basis of disputes over post-expiration aspects of the previous 2006 PLA. By the time those disputes were resolved, through litigation, appeals and arbitration, the ITC action had run its course. In the meantime, LG claimed it could not talk with InterDigital about renewing the 2006 PLA.
664. At the point when negotiations resumed, Mr Grewe describes LG’s handset business as in serious decline and as a shell of its former self. Mr Bezant gave figures for the decline in LG’s market share: 2009 (when InterDigital first approached LG): 10.1%; 2017: 3.2%; 2019: 1.7%. I consider there is an element of hindsight in Mr Grewe’s observations, since we know that LG subsequently exited the market. LG’s market shares in 2017 and 2019 were still substantial.
665. Mr Merritt highlighted two points about LG: first, that it had been a prior customer and second, that it was ‘a business that, while sometimes performing well, often failed to live up to expectations’. He continued:
- ‘Based on that history, when LG was willing to commit to pay a considerable sum for a three year license, we found that acceptable under the umbrella of our customary licensing terms as (i) we believed that LG’s business was not likely to perform at the level that it hoped it would and was paying for, and (ii) because they were renewing an agreement, we could be flexible on past sales (albeit they had gone unlicensed for an extended period of time.). I note that since doing this deal our concerns were correct in that LG has now exited the smartphone market.’
666. LG agreed to pay \$[RED]m, comprising \$[RED]m within 45 days from the effective date, followed by 8 payments of \$[RED]m due quarterly down to 31 December 2019 and 4 payments of \$[RED]m due quarterly until 31 December 2020. Subject to receipt of the first payment of the Licence Fee, InterDigital released LG from any claims of past infringement from 1 January 2011 through to the effective date of 30 November 2017. Mr Meyer calculated the released sales as totalling [RED]m units. Mr Meyer noted that in InterDigital’s 2017 Annual Report, it stated that:
- ‘[o]ur agreement with LG is a multiple-element arrangement for accounting purposes. We recognized \$42.4 million of revenue under this patent licence agreement during 2017, including \$34.5 million of past sales.’
667. Mr Meyer proceeded on the basis that \$34.5 million was the payment for LG’s past sales and the remaining \$[RED]million was payment for LG’s future sales. Mr Bezant’s split of the PV consideration was past:future \$40m:\$ [RED]m.

668. The estimation of LG's future sales creates a complication. In a side letter to the PLA, the parties agreed to use LG's stated expectation and forecast that its future sales in the term would be in the range of [REDACTED]million units. Mr Bezant proceeded on the basis of this range. Mr Bezant's rate for the past, blending all generations was \$[RED], but his stated rates for LG 2017 lie in quite wide ranges. Mr Bezant also commented, based on the witness evidence from InterDigital, that it was less optimistic about the expected sales volumes than LG, so his upper end rates 'may be more representative of [InterDigital]'s views and the lower end rates more representative of LG's views'.
669. Mr Meyer considered it was preferable to ignore this range, which he characterised as subjective and potentially misleading due to the parties' self-interests. His approach was to rely on IDC data for LG's actual sales in 2017 which he then used to forecast units for the remainder of the licence term, applying growth rates consistent with contemporaneous analyst reports and IDC data, but discounted the resulting figure to present value as of the date of the licence using a discount rate of 10%. He considered this approach presents a more objective view of the actual market per unit rates for a licence to InterDigital's Declared Cellular SEP portfolio. On this basis, Mr Meyer's estimated total future sales was 183.27m units, PV adjusted to a total of 158.9m units.
670. Mr Meyer's acceptance of InterDigital's 'recognition' of the proportion of the sums paid under the licence has a profound effect on the implied royalty rates for past and future sales. Using IDC data, Mr Meyer's corrected figures were: past rate \$0.09, future rate as \$0.61. He also calculated an overall rate (as corrected) which blended past and future as \$0.24.
671. In his reports, Mr Bezant used historical sales data from IHS. Only later did the parties agree on the use of IDC data. However, by way of comparison, the future only rates which Mr Bezant derived from LG 2017 were:
- i) LER: 3G: \$[REDACTED]; 4G: [REDACTED]; 5G: [REDACTED].
 - ii) PDR: 3G: \$0.66-1.33; 4G: 1.34-2.73; 5G: 1.61-3.27.
 - iii) Mr Bezant also stated that LG 2017 was primarily a 4G licence (65-68% 4GMM based on PV-adjusted revenues) but with material 3G sales (30-34% 3GMM, again based on PV-adjusted revenues). With those types of 4G:3G balance, it can be seen that Mr Bezant's calculated future rates (whether LER or PDR) are considerably higher than either Mr Meyer's future only rate or Mr Meyer's blended rate.
672. The wide ranges presented by Mr Bezant beg the question as to where in those ranges one should pick a value. I have noted above that in their closing submissions, InterDigital abandoned any reliance on the upper bound figures, instead presenting a narrower range between the lowest and mid-range values. As far as I could tell, nowhere was there any explanation of why this sub-range was considered more appropriate, other than the self-fulfilling prophecy provided by the Top-Down case or the underlying theme that InterDigital took a 'conservative' approach.

673. On balance, I prefer Mr Meyer's unpacking because it approximates far better to what someone in the market would do with the available information.
674. Mr Bezant drew attention to the point that in 2017, LG's market share was similar to Lenovo's market share in 2020. He did not consider the small difference would affect comparability. I agree. In that and other respects, the circumstances of LG 2017 are similar (not identical by any means) to the circumstances I have to consider in relation to Lenovo.
675. Mr Bezant suggested that InterDigital may have accepted a lower rate from LG because (i) the licence took a long time to negotiate, during which time there was litigation and (ii) LG's market share had declined between 2009 and 2017. However, Mr Merritt's evidence (which I quoted above) was, as Lenovo submitted, hardly the language of an organisation reluctantly acquiescing to a result procured by hold-out. Although LG exited the market in 2021, Mr Bezant accepted there was no evidence that it was contemplating a market exit in November 2017.

ZTE 2019

676. This PLA was entered into on 18 October 2019, effective from 1 January 2019 through to 31 December 2021. ZTE agreed to pay:
- i) \$[RED]m, comprising \$[RED]m within 70 days of the execution date, \$[RED]m on or before 31 March 2020 and \$[RED]m on or before 31 March 2021, in respect of [REDACTED]m units [RED]; and
 - ii) For sales [REDACTED], at RR of \$[RED] per 4G unit and \$[RED] per 5G unit.
 - iii) Some \$[RED]m by way of assignment of [RED]% of ZTE's distributions from [REDACTED].
677. ZTE also agreed to transfer 25 patent families to InterDigital. These were valued in InterDigital's 2019 annual report at \$14m utilising the market approach. InterDigital released ZTE from past infringement of the Licensed Patents (and 2G Patents) prior to 1 January 2013 and for ZTE's Nubia sales prior to 1 August 2017. Mr Meyer calculated the released unit sales as 236.69m units.
678. Mr Meyer noted that in InterDigital's 2019 Annual Report, it stated that:
- '[i]n 2019, we recognized \$19.8 million of non-current patent royalties primarily attributable to the Funai, ZTE Corporation and Innovius LLC patent licence agreements, all of which were signed in fourth quarter 2019.'
679. Mr Meyer proceeded on the basis that \$19.5 million was the payment for ZTE's past sales and the remaining \$[RED] million as payment for ZTE's future sales. Overall, the PV was calculated by Mr Meyer to be \$[RED]m, with Mr Bezant's figure being slightly higher at \$[RED]m.

680. Mr Bezant noted that under the PLA, all unlicensed terminal units (including 2G) sold by ZTE prior to 2013 were released. If ZTE renewed the PLA before 31 December 2021, unlicensed terminal units sold by ZTE between 2013 and 2018 would be released on the terms of the renewed licence. In addition, all terminal units sold by Nubia (a former affiliate of ZTE) up to 1 August 2017 were released. This provision was characterised in evidence as a ‘donut hole’.
681. Mr Bezant took the view that it was not clear what value was placed on past sales released by the parties. For that reason he estimated an upper end rate on the assumption that none of the past sales value was released and a lower end rate on the assumption that the full value of sales from 2007-2018 was released (an assumption he considered to be inconsistent with InterDigital’s witness evidence).
682. Based on a different InterDigital ‘Financial Metrics’ document, later Mr Bezant calculated, using PV figures, that \$11.2 million should be attributed to ZTE’s past sales, with \$[RED] million attributed to future sales.
683. Once various corrections had been taken into account, the experts ended up with the following rates derived from ZTE 2019:
- i) Mr Meyer: Past: \$[RED]; Future: \$[RED]; Blended: \$[RED];
 - ii) Mr Bezant: future only rates:
 - a) LER: 3G: \$[RED]; 4G: \$[RED]; 5G: \$[RED].
 - b) PDR: 3G: \$[RED]; 4G: \$[RED]; 5G: \$[RED].
 - iii) Once again, even taking future rates only, it is clear that, whatever the sales mix of ZTE handsets, Mr Bezant’s rates are considerably higher than Mr Meyer’s future rate.
684. For two reasons it is not necessary for me to resolve the issue as to which sum should be attributed to the past sales release in ZTE 2019. First, I consider the right approach is to calculate a rate representing both past and future sales (i.e. a blended rate). Second, as I have found above, I do not think it is right to proceed on the basis of what InterDigital ‘recognized’ what sum should be attributed to past sales.
685. However, as Mr Bezant noted, the US Government imposed sanctions on ZTE in 2017 which affected ZTE’s sales globally and brought it close to bankruptcy in 2018. As he said, this meant that in 2019 there was significant uncertainty around ZTE’s forecast sales. Mr Grewe went further in his witness statement saying: *‘we were very concerned that not only might we fail to secure a license but even if we did do so that ZTE simply would not be able to pay us.’*
686. Mr Grewe also mentioned ZTE’s past sales exposure as ‘significant’. He said *‘it was plain that ZTE simply couldn’t pay for it all given their cash strapped situation.’* So the ZTE PLA had a special structure as regards past sales. Mr Grewe gave more details of the ‘donut hole’ arrangement. He said they agreed

a narrow release of their exposure prior to 2013 for limited value (given that it would have been practically impossible to recover the majority of those sums via litigation in any event). The period 2013 to end 2018 was not released nor was any payment for that period taken at the time. Instead, InterDigital offered to release portions of that period for a discounted payment if or when ZTE came to renew the 2019 PLA prior to its expiration, with the volume of the release and the size of the discount contingent on the term length of the renewed licence. Mr Grewe also mentioned that they were careful to limit the scope of the licence (to just handsets and tablets) and not to infrastructure products, which also did not cover Nubia products, a former subsidiary of ZTE spun off in 2016.

687. All these factors indicate that the rate derived from ZTE 2019 was probably on the low side, and that InterDigital were anxious to get money in from ZTE, albeit a relatively modest total compared with the bigger PLAs. For these reasons, I do not regard ZTE 2019 as a reliable comparable.

Huawei 2020

688. The PLA was entered into on its effective date of 23 April 2020. The experts appeared to agree that Huawei 2020 contained a release of past sales covering the period from 1 January 2019 to 22 April 2020.

689. Mr Bezant assumed that Huawei sold 240 million units in 2019 based on InterDigital's fact disclosure. The detail in Appendix 32 indicated he ascribed sales in 2020 down to 22 April 2020 to the past.

690. Based on statements in InterDigital's fact disclosure, Mr Bezant used a range of forecasts to calculate future rates:

- i) An upper end rate, based on Huawei's 'pessimistic' forecast (1 August 2019) of [REDACTED]million units per year, Mr Bezant assumed [RED] million units per year for 2020-2023.
- ii) A lower end rate of [REDACTED] million units per year based on Huawei's 'very high' forecast of [RED] million units across 2020-2023.
- iii) Mr Bezant also referred to statements in InterDigital's fact disclosure from Huawei, on 28 August 2019, that future sales in the term would be 'lower than [RED]million units', and from InterDigital, on 3 April 2020, that 'it was highly unlikely that Huawei could not reach the threshold of [RED] million units'. Although Mr Bezant interpreted these predictions as indicating that the parties were considering somewhere around the middle of the range (which I infer to be a reference to Mr Bezant's range), I do not follow his interpretation. The quoted statements indicate they were thinking in terms of [RED] million units per year ([RED]/4).

691. Using IDC data for Huawei smartphones and cellular tablets and ABI Research data for its cellular watches and mobile broadband modems, Mr Meyer calculated total units sold in the release period at 358.94 million units.

692. Proceeding on the basis of a statement to that effect in InterDigital's 2020 Annual Report, Mr Meyer considered \$19.2 million as the payment for Huawei's past sales and the remaining \$[RED]million for its future sales. As I have previously observed, Mr Bezant said precious little about past rates in his reports, but the updated Excel spreadsheets in his Appendix 32 reveal that his past:future split of the consideration was \$19.2m: [RED]m.
693. Once various corrections had been taken into account, the experts ended up with the following rates derived from Huawei 2020:
- i) Mr Meyer: Past: \$[RED]; Future: \$[RED]; Blended: \$[RED].
 - ii) Mr Bezant: future only rates:
 - a) LER: 3G: \$[RED]; 4G: \$[RED]; 5G: \$[RED].
 - b) PDR: 3G: \$[RED]; 4G: \$[RED]; 5G: \$[RED].
 - iii) On any view, these are very wide ranges. [RED] million units a year would put the rates towards the higher figure. On that basis, even taking future rates only, it is clear that, whatever the sales mix of Huawei units, Mr Bezant's rates are considerably higher than Mr Meyer's future rate.
694. In his first report, Mr Bezant set out a series of factors affecting reliability and relative comparability, the first four being the same or similar as for Samsung 2014:
- i) His fifth point was **regional discount**. Huawei had a very high proportion of its sales in China (c.60%), which led InterDigital to include a [RED]% regional discount. Mr Bezant indicated that his PDR included adjustments for this and the next point, as well as for **past sales treatment** and **volume discount** (his third and fourth points).
 - ii) His sixth point was **term discount**. Huawei 2020 was for a longer term (than the posited Lenovo PLA), so qualified for a larger term discount.
 - iii) His seventh and last point was **negotiating behaviour**. Mr Bezant made reference to the previous litigation between Huawei and InterDigital and to the fact that the day after Huawei 2016 expired, Huawei launched an 'aggressive' rate-setting claim in China. Mr Bezant suggested that overall this may have meant that InterDigital had to agree to a lower rate than with a willing licensee.
695. I doubt that Huawei's action in China caused any significant reduction in the rate agreed. The other points concern adjustments, which Mr Meyer tackled in a different way. I consider his proposed adjustments below.
696. Mr Merritt pointed to the substantial impact on Huawei's handset business by their inclusion on the export ban list in the US, which affected Huawei's access to Google mobile services, which were essential for Android phones. He explained that this meant that Huawei's handsets were effectively off the market except in China. Mr Merritt's evidence was that Huawei's willingness to

‘guarantee payments’ in an ‘uncertain environment’ had enabled the parties to ‘bridge the economic gap between the companies’, arriving at ‘an acceptable agreement with Huawei, using our customary terms’. Mr Grewe accepted that the PLA was an ‘agreement with which [the parties] were both satisfied’.

Xiaomi 2021

697. Xiaomi was founded in 2011 and was not the subject of any prior licence with InterDigital. The PLA was signed on 30 July 2021 with [REDACTED] and the term lasting until [REDACTED]. Xiaomi agreed to pay a total of \$[RED]m, comprised of an initial payment of \$[RED]m to be paid within 90 days and then quarterly payments of \$[RED]m.
698. In her third witness statement, Ms Mattis provides the background against which Xiaomi 2021 was agreed. When she became involved in early 2020, the parties were already in litigation (see further below). She says that Xiaomi refused to pay for their past sales. Eventually, she says, the parties agreed to put aside the issue of past royalties to avoid further delay and to get Xiaomi under licence. She also says that InterDigital did not adjust its forward rate at any point to account for the fact that the past was not released and ‘*The past (and any other) unlicensed sales remain to be collected at the expiry of the term.*’ Ms Mattis also mentions that Xiaomi had concerns about being treated similarly to Huawei (particularly in the US), and negotiated a provision which would entitle them to terminate after a certain amount of time if that transpired.
699. Relying on Mr Djavaheerian’s analysis, Mr Meyer considered Xiaomi 2021 in his first report. Mr Bezant was instructed not to deal with this PLA in his first report but to wait until after it had been addressed in InterDigital’s witness evidence.
700. The principal complication arises from the effect of the [REDACTED] granted by InterDigital to Xiaomi in clause [RED] of the PLA. Mr Djavaheerian considered this an unusual provision. The clause provided in essence that [REDACTED]

.....the effectwas to discourage litigation and encourage peace during the term, subject to

[REDACTED].

701. Mr Meyer unpacked Xiaomi 2021 on two alternative bases: first, on the basis that the entire \$ [RED] m consideration was payment for sales made during the term; second, on the basis that that consideration should be applied both to past sales from [RED] and for the sales in the term.
702. Assuming that the parties had in mind a 6-year limitation period, this surrender covered sales going back to the beginning of [REDACTED]. The total sales in that period were calculated by Mr Meyer to amount to [RED] m units. However, InterDigital did not and would not 'recognise' any part of the consideration as covering past sales. So, for that reason, for the past Mr Meyer used a royalty rate of \$ [RED] which was his weighted average rate for the past derived from LG 2017, ZTE 2019 and Huawei 2020 in PKM-12.
703. Mr Bezant allocated zero of the consideration to the past, so the total consideration (PV of \$ [RED] m) was allocated by him to the future only.
704. The PLA was agreed against a backdrop of litigation in China, Germany and India. Xiaomi had obtained a global anti-suit injunction against InterDigital from the Wuhan Court in China, in which Xiaomi was seeking a global FRAND determination for InterDigital's 3G and 4G portfolio. Xiaomi had also launched a number of invalidity attacks against InterDigital patents in China. Later, InterDigital secured anti-anti-suit injunctions in Germany and India and were pursuing infringement actions in both Germany (LG Munich) and India.
705. Once various corrections had been taken into account, the experts ended up with the following rates derived from Xiaomi 2021:
- i) Mr Meyer: First basis (effectively future only): \$ [RED]; second basis (blended past and future): \$ [RED].
 - ii) Mr Bezant:
 - a) LER: 4G: \$ [RED]; 5G: \$ [RED].
 - b) PDR: 4G: \$ [RED]; 5G: \$ [RED].
706. Mr Meyer evidently preferred the second basis on which he had unpacked Xiaomi 2021, to derive a blended rate, because he said it recognised the reality that [REDACTED].
707. I accept Mr Djavaherian's analysis of the [REDACTED] with the result that I consider Mr Meyer was correct to take the past sales into account. However, his \$ [RED] past rate is probably too low because it reflects the InterDigital approach of recognising a low estimate of the overall consideration for the past. This inflates the future rate. Hence, his blended rate is, in my view, the more reliable figure to take from this PLA.
708. As for Mr Bezant's list of factors, the first two were as for Samsung. The third and fourth points, **volume discount** and **regional discount**, were adjustment

points, as above. His fifth point was **litigation history**. Mr Bezant referred to the anti-suit injunction which Xiaomi secured against InterDigital, pointing out (a) that it prevented InterDigital from ‘*enforcing InterDigital’s patents in any court anywhere in the world*’ presumably against Xiaomi, and (b) that breach of the injunction carried with it ‘*a daily fine of several hundreds of thousands of dollars*’. On this basis, Mr Bezant considered that InterDigital may have agreed to a lower rate in order to conclude a deal.

709. Mr Bezant did not refer to InterDigital’s countermeasures. As Lenovo pointed out, the ASI obtained by Xiaomi was part of multi-national litigation between the parties, some brought by InterDigital. Against the backdrop of litigation being pursued by each party against the other, Ms Mattis accepted that they ultimately reached ‘*a licence agreement with which both parties werehappy.*’

710. Overall, I find no support for Mr Bezant’s suggestion.

TWO OTHER PLAS RELIED UPON

711. I will mention briefly two other PLAs which InterDigital relied upon in their alternative case, along with LG 2017. These are RIM 2012 and Innovius 2019.

RIM 2012

712. RIM had a long running relationship with InterDigital. RIM’s current PLA was due to expire at the end of 2012 and Mr Grewe said they spent most of 2012 on technical discussions, getting onto economic aspects in the autumn. RIM 2012 was concluded in the last few days of 2012, just prior to the ITC actions brought by InterDigital in 2013.

713. Although it was a RR PLA with floors and caps, Mr Grewe said it included a substantial prepayment. Mr Bezant also identified a pre-payment credit from a prior PLA.

714. Mr Grewe said that RIM 2012 ‘set the bar’ for InterDigital’s then 4G programme as far as rates, caps and floors. It covered 2G, 3G and 4G. The PLA sets out four different rates, each with a cap and a floor, including a 4G only rate set at the 3GMM rate, which was key for RIM which was about to introduce a 4G only tablet. RIM 2012 is noteworthy for the volume discount table provided to RIM in negotiations.

715. Lenovo submitted that RIM 2012 was not a reliable comparable, being old and concerned with devices for the business market with usually high ASPs. Mr Bezant identified only one factor which might affect reliability and relative comparability – RIM’s declining business. RIM’s market share had declined from 3.6% in 2010 to 1.0% in 2013. Mr Bezant noted that Lenovo’s market share was also in decline and considered this factor would not affect comparability. However, RIM was also in financial difficulty, a point which does not apply to Lenovo.

716. I do not propose to place any reliance on RIM 2012. The royalty rates set out in the PLA, which were basically InterDigital's 'program rates' at the time, are not a reliable guide, being very much higher than the range of rates derived from the Lenovo 7. Mr Bezant's LERs from RIM 2012 were 3G: \$1.56; 4G: \$2.11. Mr Bezant assumed the volume discounts only applied to LS licences.

Innovius 2019

717. InterDigital made a particular point about Innovius 2019. It was said to be a 4G only licence and there was no doubt about the rate, \$ [REDACTED] per unit, which both experts agreed. Indeed, that rate was Mr Bezant's LER and PDR. InterDigital's point was that, given Innovius was a licence broker, it is unable to hold out and would not have any fear of hold up. So InterDigital relied on it as plainly a deal negotiated free of any hold up or hold out. There is a little more to it.
718. Ms Mattis gave some limited evidence about Innovius. She said that during their discussions Innovius indicated they believed they could conclude a deal with a technology company [REDACTED] which InterDigital had not been successful in licensing, due to Innovius's contacts and ability to licence the patents of other owners at the same time. Mr Merritt said the PLA was the first of its kind. Mr Grewe said the negotiating team at Innovius were highly experienced.
719. Mr Bezant's analysis indicated that InterDigital would receive \$ [REDACTED] per unit if Innovius succeeded in entering into a sub-licence with [REDACTED], and in return, Innovius would receive [REDACTED] \$ [REDACTED] per unit. So [REDACTED] would be paying a minimum of \$ [REDACTED] per unit. Under the sub-licence, [REDACTED] would be released from all past sales, albeit that Innovius had to pay \$ [REDACTED] for all products reported as sold by [REDACTED] [REDACTED] prior to the effective date of the PLA. The PLA also included [REDACTED] of any [REDACTED].
720. In his Innovius 2019 tab in Appendix 32, Mr Bezant only accounted for past sales going back to [REDACTED], on the basis that was when the [REDACTED] phone was launched. I received no information as to whether the [REDACTED] was [REDACTED] first 4G phone, but I doubt that [REDACTED] was that far behind in introducing a 4G phone. Mr Bezant's analysis also states that [REDACTED] did not sell any 3GMM handsets, but that begs the question as to how [REDACTED] 3G handsets were licensed or released.
721. Overall, I conclude I have a very incomplete picture. Viewing Innovius 2019 in the light of the other evidence about InterDigital's licensing practices, I am left with a strong suspicion that the \$ [REDACTED] represents effectively an inflated future only rate, negotiated on the basis of a release of past sales (cf. Mr Meyer's future only rate of \$0.61 from LG 2017, but his blended rate of \$0.24). For all these reasons, I decline to place any weight on Innovius 2019.

WERE THE LENOVO 7 ALL THE RESULT OF HOLD-OUT?

722. I have taken account of the specific points which were made in Mr Bezant's reports on each PLA. I can now return to InterDigital's more general and

overarching arguments about hold-out. Above, I mentioned InterDigital's submission that hold out has been what has driven the volume discounting in their licensing program, the implication being that, but for hold-out, no volume discounting would be required, or not as much.

723. The way that Mr Merritt described the advent of volume discounting offers scant, if any, support for that argument, although I can see that the licensing landscape changed when implementers began selling cellular devices in ever greater volumes. The argument might have had better traction if there had been one PLA from which the implied rates were very low compared with other PLAs, and the evidence from InterDigital was that they were forced to grant substantial volume discounts to achieve a deal in that PLA. However, when one gets to the point where 97% of all handsets licensed by InterDigital are accounted for by the Lenovo 7, I consider the argument has no traction at all.
724. Notwithstanding the reasonably consistent refrain *in general terms* about hold-out (mostly via Dr Brismark), there were two striking absences from InterDigital's evidence:
- i) The first was that there was no evidence to the effect that the Lenovo 7 cannot be relied upon at all, because all those deals (and the rates implied from them) were massively affected by hold-out, and, for example, only the PLAs consistent with InterDigital's 'program rates' were FRAND. Mr Merritt's evidence was to the contrary, since he said (as I noted in paragraph 126 above) that, despite the challenging environment, InterDigital's licensing programme continued to operate well. He attributed their continued success to their flexible approach to licensing and that their approach 'had been informed and validated through extensive interaction with customers'. The most important of those interactions, and the ones to which InterDigital would have devoted the greatest resources, were those with the six largest licensees i.e. in the Lenovo 7.
 - ii) The second was that InterDigital did not develop a case in what I might call 'the middle ground'. By that I mean that no case was presented that the Lenovo 7 were affected by hold-out and resulted in rates which were, say, 20% below the true value. Instead, InterDigital's case was that the 'true value' was multiples of the rates which were derived from the Lenovo 7 on a straightforward blended analysis.
725. Furthermore, the general decline in rates over the years must not be taken out of context. Part of the relevant context is that the volumes of cellular devices has grown very significantly. Thus, despite a decline in rates, I infer that the revenues for SEP licensors have increased substantially.
726. I am driven to the clear conclusion that, aside from the observations I have made based on circumstances specific to certain of the Lenovo 7 PLAs, there was no evidence of InterDigital being forced by extensive hold-out to grant discounts of 60%, 70% or 80% to the largest licensees or that the PLAs with the Lenovo 7 imply rates which are far below the true value of InterDigital's portfolio. If InterDigital had really thought those PLAs were far below the true value of their

portfolio, it would not have been economically sensible to agree them. Economic sense would have pointed to litigation (and often to the *continuation* of litigation which was already on foot), even if the prospect of a Court setting global FRAND terms was not then available. It would have been worthwhile obtaining a FRAND rate for the USA for example, and then extrapolating from that to a global rate. Instead, in my judgment, the Lenovo 7 are the best group of indicators of the value of InterDigital's portfolio, precisely because they are the result of InterDigital's own assessments of the value of their portfolio for the largest licensees.

727. Having dealt with the rather extreme argument made by InterDigital, I should also consider whether the Lenovo 7 were affected by a degree of hold-out.
728. It is clear that InterDigital have been affected by a degree of hold out, but the issues are (i) whether the impact is reflected in the royalty rates in these PLAs and (ii) if so, to what extent. Hold out, it seems to me, has been a principal driver for the flexibility and creativity used by InterDigital in its licensing. As I have described, InterDigital's licensing approach has been heavily influenced by two obstacles: (a) the lack of the ability (until recently) to obtain a global FRAND ruling and (b) the perceived influence of national limitation periods. SEP licensors now have the ability to litigate to determine global FRAND terms and, if my ruling regarding limitation is upheld on appeal, there will be much less incentive for implementers to engage in hold out. However, that second point has undoubtedly been a, or the, principal reason for the practice which has grown up of waiving or heavily discounting past royalties. Mr Djavaheerian said in his cross-examination that it is a common occurrence that past royalties are either waived or discounted, whether there is a dispute or not. Nonetheless, the influence of those two points continues to be reflected in InterDigital's approach to licensing.
729. Against that, InterDigital are a large licensing organisation with ample funds to spend on litigation. In one sense, InterDigital and other SEP licensors have received something of a windfall from the very large increase in cellular device volumes over the years. In short, it is more than able to look after itself. It is not shy of litigating and, most of the time, it is able to choose the forum in which it brings the claim. Furthermore, InterDigital has developed ways to cope with the two obstacles I mentioned above, and this has led to considerable distortion, particularly in future rates which can be derived from their PLAs.
730. I should also take account of the point in InterDigital's licensing at which I am considering the influence of hold out. Contrast the present situation with a hypothetical earlier situation:
- i) The hypothetical earlier situation sits before any of the Lenovo 7. InterDigital bring proceedings against one of the top 10 handset manufacturers to determine FRAND terms (assuming no ITC proceedings because an exclusion order can distort the negotiating dynamic). I am not sure it matters whether the claim was for the US alone or an early attempt at global terms because either way, InterDigital would make the argument that there is widespread hold out which has depressed rates generally across the industry. As usual, the Court would

have to do the best it could to decide on FRAND terms and to decide whether hold out had depressed rates.

- ii) In the present situation, InterDigital now has a considerable body of PLAs, including the Lenovo 7 i.e. PLAs with some of the largest implementers.

731. It seems to me that, having concluded seven PLAs with some of the largest implementers, there is force in Mr Meyer's suggestion that InterDigital has now established something of a 'market rate' for their portfolio. It also seems to me there must come a point at which the allegation of hold out ceases to have force. Against that, InterDigital would no doubt argue that a degree of hold out has been baked into their PLAs.

732. If a degree of hold out has been baked in, the final issue is how to quantify it. This takes me back to a point I have already discussed in paragraph 724.ii) above. In their case, InterDigital went for the jackpot, so to speak. InterDigital's alternative case, based on LG 2017, was put on the same basis. InterDigital did not offer a more modest alternative case, because the mere presentation of such a case would have severely undermined their main case. If a party takes that course, there is some authority to the effect that it cannot thereafter complain if the Court fails to deal with the case as sympathetically as it might have done (cf. *Senate Electrical Wholesalers Ltd v Alcatel Submarine Networks Ltd* [1998] EWCA Civ 3534 at [50]-[55]). I recognise, however, that the point in *Senate* was made in litigation between and which only affected the two parties. FRAND determinations are different, because they have the potential to affect the SEP universe, but the Court can only make a FRAND determination on the evidence put before it.

733. I realise that a top-down cross check *might* be a way of quantifying the degree of hold out which a SEP licensor has experienced, provided the cross check was persuasive. However, the top-down cross check presented by InterDigital attempted to support its jackpot case and, for the reasons explained in the next main section of this Judgment, I did not find it persuasive in any of its guises. I also note that, in none of its guises, did the top-down cross check attempt to present a more modest alternative case.

734. I do not consider that any of the analyses presented by Mr Bezant or Mr Meyer assist me to identify whether a degree of hold out has been baked into the Lenovo 7 (or any of them), or how to quantify it. However, I will continue to take into account where I have found that the rates derived from some of the Lenovo 7 are on the low side, due to pressures on InterDigital.

MR MEYER'S THREE ECONOMIC ADJUSTMENTS

735. The next stage in Mr Meyer's analysis was to take the rates he had derived from each of the Lenovo 7 and to perform adjustments in order to, as Lenovo put it, improve the economic comparability of the implied rates. He adjusted for:

- i) Sales distribution by cellular standard.

- ii) Sales distribution by geography relative to emerging markets.
- iii) Sales distribution by geography relative to patent coverage.

736. At a general level, Mr Bezant accepted the principle behind the first two adjustments but disputed Mr Meyer's method. InterDigital and Mr Bezant disputed the third adjustment. The effect of Mr Meyer's adjustments resulted in no change to his weighted average rate for the past – it remained at \$0.07. For the future rate, his adjustments brought his weighted average rate down by \$0.04, his third adjustment accounting for the vast majority of that reduction. For that reason, it is necessary to consider his adjustments and particularly his third in some detail, albeit there is considerable detailed data underpinning each one.
737. However, anticipating the finding I make below not to accept Mr Meyer's weighted average approach, I am not so much concerned with the actual adjustment ratios across each of the Lenovo 6, but more with the principle of whether each adjustment is justified.

(1) Adjusting for sales distribution by cellular standard.

738. As I indicated, Mr Bezant accepted the principle that it was necessary to make an adjustment to reflect that each licensee had a different mix of sales by standard, but he took issue with the way in which Mr Meyer made this adjustment. In his first report, Mr Meyer explained that he adjusted the amounts paid under the Lenovo 6 to what would be paid if each of the Lenovo 6 had the same mix of 'units by technology' as Lenovo. He made this adjustment separately for past and future sales. He did the calculations on two bases: first considering Lenovo's sales from Q3, 2013-2020 and second, considering Lenovo's sales from 2007-2020.
739. The first step in Mr Meyer's process was to assess, by reference to InterDigital's 'program rates', the relative value assigned by InterDigital to each standard. This gave values of 3G: 39%; 4G: 76% and 5G: 100%. From some of InterDigital's disclosure, Mr Meyer considered that InterDigital valued its 2G SEP portfolio at 35% of its 3G portfolio, giving a % of 26.7%, which he applied in respect of the past rates but not the future, since there were no significant 2G sales in the future for any of the Lenovo 6.
740. An illustration of why some adjustment is necessary is given by comparing Lenovo sales mix from 2007-2020 with the sales mixes for LG from 2011-2017 and Huawei 1 January 2019-22 April 20. The sales mixes were:
- i) Lenovo: 2G: 36.5%; 3G:31.6%; 4G: 31.8%; 5G: 0.1%.
 - ii) LG: 2G: 23.9%; 3G:36.5%; 4G: 39.6%; 5G: 0.0%.
 - iii) Huawei 2020: 2G: 0%; 3G:0.4%; 4G: 79.0%; 5G: 20.6%.
741. These gave rise to adjustment ratios of 0.914 for LG, reflecting the fact that its sales mix was roughly comparable, and 0.574 for Huawei, reflecting its sales

mix was very different, not a surprising result bearing in mind the much later and shorter period involved.

742. For the future, Mr Meyer estimated Lenovo's sales mix to be 2G: 0.0%; 3G: 0.1%; 4G: 92.6% and 5G: 7.3%, closest to Apple, as indicated by its adjustment ratio of 0.990 and most different to Samsung with an adjustment ratio of 1.343, a reflection of the age of Samsung 2014 notwithstanding its 10-year term. LG's future sales mix was again very close to Lenovo's, with an adjustment ratio of 1.027.
743. Mr Bezant criticised Mr Meyer's method for two reasons. First, because Mr Meyer used actual historical data which 'may not reflect the sales mix by cellular standard forecast by the parties at the time of signing the licence'. Second, because Mr Meyer only considered the sales mix by standard up to Q2, 2021 but Mr Bezant pointed out that a number of the PLAs continued well beyond that date, with the result that the importance of 5G will be understated and 3G overstated. Mr Bezant also pointed out that when Samsung 2014 and Apple 2016 were signed, there were no forecasts for 5G. Mr Bezant said this would have a significant impact on the sales mixes assumed for those licences. Mr Bezant presented a corrected version of Mr Meyer's analysis. The future adjustment ratios for Samsung 2014 and Apple 2016 increased, but for LG, it was only marginally different - 1.054 as opposed to 1.027. Mr Bezant did not present a correction for the past.
744. On Mr Bezant's first point, in cross-examination, Mr Meyer appeared to accept the general point that one should not use actual data after the fact, but Mr Bezant's correction appears to show the difference is not material.
745. In its closing, Lenovo contrasted what they called the complexity of Mr Bezant's approach with Mr Meyer's 'straightforward' approach. Lenovo were referring to Mr Bezant constructing separate per unit rates for each generation, a process which Lenovo contended required a whole series of assumptions as to sales mix by standard and ASPs, and then to apportion the consideration according to proxy royalties based on the most recent RR licence preceding the relevant LS licence or else InterDigital's programme rates, once published. As Lenovo pointed out, Mr Bezant ends up using a different source for the standard split for each licence. Furthermore, the licensee under the LS licence in question may have had a rather different sales mix to the most recent RR licence.
746. It is not possible to transpose the two approaches. Neither is perfect, but I consider that Mr Meyer's approach is the better way to adjust for sales mix. It involves far fewer assumptions. The difference between using actual data and forecast data does not, it seems to me, make a material difference overall, particularly when I come to assess the relative value of each PLA according to my own assessment.

(2) Adjusting for sales distribution by geography relative to emerging markets

747. Mr Meyer's second adjustment adjusts the implied rates to reflect Lenovo's sales mix in 'Emerging Markets' when compared with the relevant PLA in the

Lenovo 6. Lenovo contended that he performed this adjustment in a sensible and straightforward way, in the following steps:

- i) First, he analysed seven third party data metrics to identify whether a country or region is a 'Developed Market' or an 'Emerging Market'
- ii) Second, he analysed third party data on ASPs and found that handsets have consistently sold for less than half (about 40%) as much in the Emerging Markets as in Developed Markets, noting also the 50% discount for China applied in *UPHC*.
- iii) Third, Mr Meyer then calculated regional adjustment ratios for each of the Lenovo 6, based on their relative sales mix between the two markets.

748. Lenovo contended this adjustment was obviously appropriate, consistent with the logic of the 50% adjustment applied in *UPHC* and was relatively minimal in its effect, having no material impact on Mr Meyer's weighted average rate for the past, and only slightly decreasing the weighted average for the future by \$0.01. Notwithstanding the overall effects, there are two points to note. First, that in this adjustment, Mr Meyer applies a 50% discount to all Emerging Markets. Second, that there was variation amongst the individual licensees in the Lenovo 6. The sales distribution between Developed and Emerging Markets for Samsung and ZTE was similar to Lenovo's, reflected in adjustment ratios close to 1. The other licensees fell into two camps: Apple and LG had sales distributions between Developed and Emerging Markets which were almost the mirror image of Lenovo's: 64.2%:35.8% and 67.2%:32.8% vs 34.2%:65.8%, reflected in adjustment ratios of around 0.8. In the other camp, the two most recent licences, Huawei 2020 and Xiaomi 2021, had a greater proportion of sales in Emerging Markets: 90.5%:9.5% and 88.5%:11.5%, reflected in adjustment ratios of over 1.2.

749. Since I am not going to accept Mr Meyer's weighted average approach, and propose to adopt a different weighting system, with emphasis on certain individual PLAs, it is necessary to ensure this adjustment is properly justified.

750. Mr Bezant agreed with the adjustment in principle but objected to the way in which Mr Meyer performed it. Mr Bezant contended the adjustment should only be made in respect of China, based on three reasons:

- i) His first reason concerned patent coverage, but, as Lenovo contended, this missed the point, since the adjustment was not to reflect patent coverage, but the prevailing economic conditions in the Emerging Markets.
- ii) His second reason was that '*...not all of the sales in these other emerging markets were manufactured in China.*' Again, as Lenovo submitted, this was circular and simply assumed that the adjustment should be restricted to China. It is not an answer to the detailed ASP data which Mr Meyer examined and used. This indicated that in fact ASPs in China were not the lowest, and that in fact, the ASPs in Mr Meyer's Emerging Markets were lower than in China.

- iii) Mr Bezant's third reason was that '[InterDigital] has not offered a discount on sales outside of China historically'. Lenovo submitted that it would clearly be wrong to allow InterDigital's unilateral preference to drive the scope of an economic adjustment which is based on objective independent data.

751. I found the Worldwide ASP by Region data presented by Mr Meyer (PKM-8.1) interesting. Although limited to 2015-Q2, 2021, it showed how ASPs in the US were consistently the highest, and consistently higher than in Europe. The US and European ASPs straddled the average ASPs for Developed countries. The Emerging ASPs were consistently less than half the Developed ASPs, with the Rest of World and LATAM ASPs straddling the Emerging average, but both being consistently below the China ASPs. China's ASPs started (in 2015) at around 60% of Developed ASPs but rose consistently to about 75% of Developed ASPs in 2021. Similarly, China's ASPs started at 40% higher and ended 70% higher than Emerging ASPs. Thus, China's ASPs lay between the Emerging average and the Developed average but, over the period, grew closer to Developed and further away from Emerging. Overall, the percentage price discount for Emerging Markets over the period averaged at 60%. Whilst I agree that a discount for Emerging Markets is appropriate, these data raise the question of whether it remains appropriate to apply a 50% discount to China. I do not know the data which was used to justify that 50% discount being applied originally, but these ASP data suggest the picture as regards China has changed significantly.

752. In closing InterDigital developed further reasons as to why this adjustment was inappropriate:

- i) First, that Mr Meyer's approach was not grounded in any indicia which the parties to the relevant PLA would have taken any account of at the time. Mr Meyer accepted that his analysis was far more detailed than anything which would have been undertaken or contemplated by parties to a negotiation. It also involved data from years after some of the PLAs in question.
- ii) Second, InterDigital submitted that Mr Meyer's analysis was based on a misunderstanding of the regional approach used by Birss J. in *UPHC*. InterDigital submitted that the MM and OM regions in *UPHC* were not defined by economic development but by patent coverage and the point was to address the risk, with a very small portfolio, that some countries might go patent free.
- iii) Third, InterDigital submitted that there was a real risk of double counting in Mr Meyer's analysis because lower average ASPs in his Emerging Markets are partly driven by a higher proportion of 2G/3G phones, with lower ASPs being sold in those markets relative to Developed Markets.
- iv) Fourth, InterDigital submitted there was a further practical issue in addressing this country by country based on sales, which ignores the fact that at least two countries are involved – the place of manufacture and the place of sale.

753. I am not impressed by the first point. It amounts to an invitation to ignore relevant data which is now available. The Court is, in a sense, in a very privileged position relative to ordinary negotiating parties in that it has (a) disclosure of all relevant PLAs (b) a raft of data brought forward by the experts; (c) the views expressed by each expert which are open to test in cross-examination; and (d) detailed argument from each side. Whilst the unpacking of the various LS licences may approximate to what can be achieved in the industry, the processes are far more detailed in Court proceedings. If the data is available which supports a more refined analysis, I consider the Court should adopt the more refined analysis. Each such step should lead to a more precise estimation of FRAND terms. If that means that the Court's decision modifies the approach in future licensing negotiations, so be it.
754. The related point concerns Mr Bezant's repeated emphasis that InterDigital had only ever granted a 50% reduction for China. However, InterDigital's fact evidence showed that this 50% rate was agreed by InterDigital because Chinese companies were demanding it. The mere fact that InterDigital has not previously agreed reduced rates for other territories cannot be determinative. Furthermore, it would be contrary to principle to allow InterDigital's unilateral choices to be determinative particularly when the underlying data presented by Mr Meyer indicates the world has changed.
755. InterDigital's second point requires an analysis of the reasons underpinning the adjustments made by Birss J. in *UPHC*.
756. In closing, Lenovo submitted that China was a region of absolutely central importance in *UPHC*. They pointed out that, as recorded in *UPSC* at [37] somewhere between 64% and 75% of Huawei's sales could only be touched by UP's Chinese patents, because over half of its sales were in China, all of its manufacture was in China and therefore all sales in non-patent countries were affected by the state of UP's patents in China.
757. On my reading of *UPHC* and [582]-[592] in particular, the analysis proceeded through the following stages:
- i) The first stage is brief but important. In [582]-[583], Birss J adopted a factor of 50% for China, based on comparables which showed that rates were often lower for China than for the rest of the world, but varied. In context, this adjustment had nothing to do with patent coverage but was founded on economic circumstances – a point confirmed by the fact that Birss J. went on to consider patent coverage in the next few paragraphs.
 - ii) Second, in [584]-[586], Birss J. then scaled the 50% rate for China by a factor based on the number of Relevant SEP families owned by UP in China as against the number of SEP families used to derive the benchmark rate. This is clear from the table in [586] where, for 2G, the benchmark rate is 0.064%, the 50% benchmark for China is 0.032% and the actual rate for China is 0.016% because UP had only 1 Relevant SEP family in China compared to the 2 SEP families used to derive the benchmark rate. It is further confirmed by the 4GMM rate, where the further scaling is 5/6ths of the 50% China rate.

- iii) Third, in [587]-[592], Birss J then considered whether any other regions of the world should have lower rates than the benchmark rate. He concluded that parties negotiating in a FRAND way would not seek to divide up the world into too many categories because that would become unworkable. He observed there was one comparable which divided the world into 3 regions. Accordingly, Birss J. divided the world into three: China, Major Markets and Other Markets. Countries qualified as MM if UP had 2 or more 2G or 3G declared SEPs, or 3 or more 4G declared SEPs. Any country below those thresholds would be OM for the relevant standard(s). Birss J. set those thresholds by reference to the table of declared SEPs per generation held by UP in each country in Annex 1 to his judgment. Birss J. also indicated that if a declared SEP was declared invalid in a particular country, it could move that country from MM to OM and any necessary adjustments could be done on an annual basis.
- iv) Birss J. also made clear that: (i) the OM rate was the China rate ‘on the basis that the products are made in China under licence’; (ii) for multimode handsets the rate was the higher of the possible applicable rates; (iii) the starting point for MM countries was the benchmark rate. It was only necessary to scale the 4G rate (again by 5/6ths) so that MM 4G rate was 0.052%.
- v) This analysis is confirmed when one puts the three sets of rates side by side:

Handsets	Benchmark rate	China and OM rate	MM rate
2G	0.064%	0.016%	0.064%
2G/3G	0.032%	0.016%	0.032%
2G/3G/4G	0.062%	0.026%	0.052%

- 758. Thus, although InterDigital’s second point appears to be substantially correct, it is clear, however, that the approach taken by Birss J. in *UPHC* concerned the particular situation before him in that case, where the number of Relevant SEPs even in the MM countries was not large and in many countries was very low indeed such that declarations of invalidity for one or even two patents would render a country free of UP patent protection. The fact that all handsets were manufactured in China meant that the China rate provided a floor, and the only effect of declarations of invalidity would be to move a MM country to OM status. It is not an approach that translates necessarily to larger portfolios.
- 759. InterDigital’s third point has force, and I must attempt to eliminate so-called double-counting. As Mr Bezant put it: lower average ASPs in Mr Meyer’s Emerging markets are partly driven by a higher proportion of lower generation devices being sold in those markets, where that difference in the sales mix is already taken into account in Mr Meyer’s first adjustment.
- 760. I must also ensure that, to the extent that I adopt any part of Mr Meyer’s analysis, the place of manufacture and place of sale are taken into account. In this regard,

I must keep in mind that Lenovo manufacture their handsets primarily in China, Brazil and India, whereas their PC business also use facilities in Japan and Mexico.

(3) Sales distribution by geography relative to patent coverage

761. In closing, Lenovo made reference to *UPHC* at [584] onwards, which I have discussed above. That analysis was conducted as part of a comparables approach. They also directed my attention to two passages from *TCL v Ericsson* on pp43 and 44, which I set out below, in the part of his judgment where Judge Selna was dealing with the top-down case presented to him. These passages are set out under the heading ‘Adjusting for Ericsson’s weaker portfolio outside the United States’

‘Generally speaking, Ericsson's portfolio is weaker outside the U.S. ... If Ericsson does not patent the same technology in other regions, then that technology remains in the public domain in those jurisdictions. A fair and reasonable royalty must be proportionally related to an SEP owner's geographic patent portfolio strength, and ignoring disparities in geographic patent portfolio strength ignores the fundamental relationship between FRAND and domestic patent law. (ETSI IPR Policy § 15.7, Ex. 223 at 7.) This is because FRAND does not permit an SEP owner to charge a royalty for an IPR it does not own, and unpatented inventions are essentially in the public domain. Nevertheless, the Court assumes that FRAND permits companies to agree to a global rate between themselves and structure their contracts accordingly, so long as such an agreement would not violate the patent law of each country where the products are sold. Many of the licenses presented to the Court during the course of the litigation reflect the fact that as a matter of commercial reality, firms regularly adopt a single world-wide rate.’

762. Slightly later he continued:

‘...to look at patent families in the abstract without regard to where actual patents are enforceable would result in a subsidy to consumers in countries where the SEP owner has more enforceable patents from consumers that are not legally obligated to pay such a royalty. In essence, a global patent rate that does not account for differences in national patent strength provides the SEP owner a royalty based on features that are unpatented in many jurisdictions.’

763. He also noted there was an important caveat to this general rule. In effect, the country where the products are manufactured effectively sets a global floor for the manufacturer’s FRAND rate.

764. Those two cases provide strong support for the notion that a FRAND approach ought, at least in principle, to take account of differences in national patent strength, but subject to the significant countervailing point made by Judge

Selna, that parties agree a single world-wide rate which takes into account these differences and all other factors.

765. Mr Bezant objected to adjustment 3 being applied on top of adjustment 2 for two reasons. First, because InterDigital only applies a 50% regional discount for sales in China and does not make any further adjustments for patent strength or coverage. Second, if the 50% discount already takes account of differences in patent strength or coverage between China and other countries, then he says it would be inappropriate to apply adjustment 3 in addition to adjustment 2.
766. Mr Bezant then offered a fallback, ‘*in case the Court finds that economic adjustment 2 does not already account for differences in patent strength/coverage between regions*’. He presented alternative adjustment ratios for adjustment 3 based on the same scenarios he considered for adjustment 2, namely (i) China only and (ii) Mr Meyer’s Emerging Markets.
767. In my judgment, Mr Bezant’s repeated reliance on the 50% discount for China only, fails to reflect reality. Furthermore, there is compelling logic in Judge Selna’s reasoning which I quoted above. In principle therefore, it is appropriate to make an adjustment to reflect InterDigital’s patent coverage. However, I must examine the detail of how Mr Meyer calculated his adjustments, and assess whether there is an element of double-counting across his three adjustments. Furthermore, I keep in mind the practical point also made by Judge Selna: that parties agree a single global rate which takes into account many factors including patent coverage.
768. I summarised the data relating to InterDigital’s patent coverage in my introduction. The detail is as follows, although Mr Meyer applied Argentina, Mexico, Brazil and Rest of LATAM separately:

Territory	InterDigital Patent Families	Percentage relative to US
US	543	100
Japan	354	65
China	334	62
South Korea	317	58
Europe ²	263	48
LATAM ³	154	28
Canada	117	22
Israel	112	21
Singapore	93	17
Hong Kong	92	17
RoW	91	17

769. As indicated above, Mr Meyer dealt with past and future separately. For the past, he derived adjustment ratios by comparing the past sales from LG 2011-2017; ZTE 2007-2012, Huawei 1 January 19-22 March 2020 with Lenovo sales

² Although InterDigital has much lower numbers of patent families in some European countries, it has 263 in Germany, 261 in the UK, 259 in France and 252 in the Netherlands

³ Similarly, although InterDigital has zero patent coverage in some LATAM countries, it has 154 patent families in Argentina, 144 in Mexico and 60 in Brazil.

2007-2020. The adjustment ratios were applied to the past period rate (blended across generations) derived from LG, ZTE and Huawei, and then weighted by the percentage weight of past sales. The overall result of this analysis is that his weighted average rate for the past remained at \$0.07.

770. For the future, Mr Meyer derived adjustment ratios by comparing the future sales from each of the Lenovo 6 with Lenovo's future sales i.e. Samsung 2013-2022, Apple 2016-2022, LG 2018-2020, ZTE 2019-2021, Huawei 23 April 2020-31 December 2023, Xiaomi 2021-[REDACTED]. Although the column heading in his exhibit indicates the comparison is with Lenovo's 2021 sales, the footnote reads 'Confidential Exhibit PKM-4.1 [Lenovo Total Handset and Tablet Unit Sales (2007-Q2 2021)'. Although that is the title of PKM-4.1, the data extracted from that exhibit and used for the comparison is only Lenovo's sales in the first six months of 2021 (i.e. Q1&Q2 or H1, 2021).
771. Although I understand the logic of this approach, it does not, in my view, produce a result which it is safe to rely upon, being heavily dependent on just 6 months of Lenovo's sales data. Furthermore, it is clear that by H1, 2021, Lenovo's sales distribution across various territories was very different to that in earlier years. Although the percentage sales in certain territories (the US, Europe for example) was roughly the same, there are very significant disparities when one looks at China (H1 2021, 1.3% vs 2007-2020, 25.1%) and LATAM (phones) (H1 2021, 44.1% vs 2007-2020, 28.4%).
772. Having noted this for Adjustment 3, I note that the same point applies to both Adjustments 1 and 2, so far as the future is concerned.

MY REQUEST FOR FURTHER ANALYSIS

773. Prompted by my concerns over the reliance on just 6 months of Lenovo's sales data, I sent a request to Messrs Bezant and Meyer asking them to carry out some further and alternative analyses of the application of Mr Meyer's three economic adjustments. In summary:
- i) my first request was whether it was possible to apply the logic of Mr Meyer's adjustments to blended rates (of past and future).
 - ii) my second request was to ask them to consider a further refinement. I was interested in a possible division of the entire period from 2007 into three (2007-end Q2, 2013; Q3, 2013- end 2018; and 2019-end 2022).
774. The experts co-operated to produce the further analyses I had requested and then each made observations on the results and their reliability. I am very grateful to both Mr Meyer and Mr Bezant (and their teams) for this additional work. The results are a series of Excel spreadsheets which embody a lot of detail. Since I do not adopt Mr Meyer's weighting analyses, some of this detail is not relevant. However, the additional analysis did shed some very useful light on where the real sensitivities lay in Mr Meyer's economic adjustments.
775. These further analyses were provided to the parties and they agreed to file further written submissions on 13th January 2023.

776. In their submission, Lenovo had nothing to add to the observations made by Mr Meyer. Instead, and even though this was not the purpose of these submissions, Lenovo took the opportunity to make two objections.
777. The first was to the notion that any value should be attributed in a past release payment to Lenovo's sales prior to Q3, 2013 (i.e. more than 6 years prior to the commencement of this action). In effect, Lenovo deployed the limitation periods card. I have considered all of Lenovo's points above.
778. The second was to a point made by Mr Bezant to the effect that Mr Meyer considered the past and future should be analysed separately. Lenovo considered this point to be misleading. I was not misled by this. My analysis above recognises that, whilst Mr Meyer did present an analysis of past and future separately, his preference was for figures which blended past and future.
779. For their part, InterDigital's submissions were lengthier. In summary:
- i) They reminded me of their detailed criticisms of Mr Meyer's approach made in InterDigital's closing submissions.
 - ii) They identified the 'central problem' with the new analyses, which was that they 'throw away the accuracy one gets from separating out future and past rates' and introduce a far greater inaccuracy than the requests are seeking to address.
 - iii) Generally, they stressed the value of separating past and future rates. They even submitted that by dropping the distinction between separate rates for past and future, it would 'fail to account for the fact that real life licensors and licensees attribute different rates for sales of a unit in the past compared to one in the future'. I entirely accept that *InterDigital* had this practice (and I suspect other licensors might well have adopted a similar practice) but the evidence as to the attitude of others in the industry was consistent and to the effect that they were interested in the total value of a PLA which could be divided by estimates of the total units covered to derive a per unit dollar rate.
780. The consequence is that, in my judgment, most of InterDigital's further submissions missed the point because they assumed the validity of Mr Bezant's approach to past and future, which I have rejected.
781. Before I analyse the further analyses and make my conclusions on appropriate adjustments, I will deal with Mr Meyer's weighting processes.

WEIGHTING

782. It will be recalled that Mr Bezant favoured using as wide a range of comparables as possible (hence his adoption of the InterDigital 20), but to give them equal weighting.
783. By contrast, Mr Meyer characterised the Lenovo 6 or 7 as being the best basket of comparables which he said reflected the 'market rate' for a licence to the

InterDigital SEP portfolio. In order to achieve his overall ‘market rate’, Mr Meyer weighted the rate he derived from each PLA by reference to the volume of sales under each PLA.

Mr Meyer’s weighting process(es)

784. InterDigital was strongly critical of Mr Meyer’s weighting process(es), by which he derived a weighted average rate from the six licences and indeed, Mr Meyer was cross-examined at some length on his approach. I have already set out the detail of the percentage weightings applied by Mr Meyer in each of his three weighting exercises – see paragraph 367 above, but will restate them here for convenience:

- i) For the past (2007-2020): LG 2017: 38.7%; ZTE 2019: 24.4%; Huawei 2020: 36.9%.
- ii) For the future: Samsung 2014: 50.5%; Apple 2016: 18.6%; LG 2017: 2.5%, ZTE 2019: 0.3%; Huawei 2020: 14.1%; Xiaomi 2021: 13.9%.
- iii) For the blended rates: Samsung 2014: 40.6%; Apple 2106: 15%; LG 2017: 6.6%; ZTE 2019: 3.2%; Huawei 2020: 15.8%; Xiaomi 2021: 18.8%.

785. When attacking his weighting process, InterDigital focussed on the future rate weightings, arguing that the effect was to weight the rate heavily in favour of the rate from the largest licensee – Samsung. It seems InterDigital focussed on the future rate weightings because they produced the greatest weight for Samsung 2014 and possibly because they produced the lowest weight for LG 2017.

786. InterDigital also contended his weighting process was even more egregious because he was not weighting by annual sales volume but by reference to the sales volumes over the whole term of the licence in question: again giving undue weight to the longest licence, Samsung. InterDigital also submitted this was all the worse because Mr Meyer had done nothing in his analysis to account for the value exchange resultant on the longer-term licence with Samsung in his unpacking exercise. InterDigital poured scorn on the justification put forward by Mr Meyer in his cross-examination, which was that his weighting achieves the market price for the InterDigital SEP portfolio.

787. In their closing, Lenovo argued that Mr Meyer was right, in that the market price being achieved by InterDigital can only fairly or reasonably be assessed on a per unit basis not on a per licensee basis. Lenovo gave an extreme assumed example to illustrate their point: If [REDACTED] sell 3 billion units at \$0.16 and [REDACTED] sell 400,000 units at \$0.69, it would be misleading to take a simple average of the two rates, or to treat the two rates as having equal weight.

788. Although initially I distrusted Mr Meyer’s weighting exercise, I came round to the view that it was a better method than taking any sort of simple average from the six licences. However, it is unnecessary to consider his weighting system any further because I am satisfied it is too crude an approach. In my view, his

weightings have the effect of placing far too little weight on the best comparable, LG 2017. Furthermore, his weightings do not allow account to be taken of the individual circumstances of each PLA, nor what was happening in the handset market generally over the periods in question, in particular, the reality that rates change over time.

789. The data presented to me did not allow an accurate assessment to be made as to whether, over time, a rate blended across generations has tended to decrease, stay roughly the same or increase over time. The problem is that there are several moving parts:

- i) If one takes per-unit dollar rates per generation, it is clear that these drop over time.
- ii) However, the per-unit dollar rate increases by generation.
- iii) ASPs for each generation start high and then drop, but this would only be relevant if *ad valorem* rates were applied.
- iv) InterDigital's share of SEPs per generation has varied, but they have a lower share of the 5G SEP universe.
- v) However, the fact that InterDigital has gradually reduced its 'program rates' with time (a feature also noted by Judge Selna regarding Ericsson's 'program rates') supports the notion that overall rates have reduced over time.

790. Having regard to the trends I have noted, I have to do the best I can on the data available to me.

MY ASSESSMENT OF MR MEYER'S THREE ADJUSTMENTS

791. I find it helpful to consider all three adjustments and to take a few steps back from the detail. Having done that, I have reached certain conclusions:

- i) First, that if adjustment 1 is applied, there is a degree of overlap in the application of adjustments 2 and 3 on top of adjustment 1. In particular, an approach similar to that taken by Birss J. in *UPHC* regarding UP's patent coverage is not warranted here. In relevant territories, InterDigital has sufficient patent coverage to make the prospect of InterDigital losing all coverage extremely remote.
- ii) Second, Mr Meyer's approach is, in certain respects, too crude because the adjustments are applied according to the duration of each of the Lenovo 7. This point is best illustrated in the summaries of the data presented in response to my second request – see, in the PTS bundle, pages 36-37 and 55-56. These summaries show there is very little data (other than sales figures from ZTE) to support analysis over the first period (2007-end Q2, 2013) or an alternative period of 2007-2011. For the second period analysed (Q3, 2013-end 2018) or an alternative period of 2012-2018, those periods are well covered by LG, as well as Samsung

2014. For the third period, 2019-2023, LG only provides sales data for the first two of those years, whereas Samsung, Apple, Huawei and Xiaomi provides sales data in all four years.

- iii) Third, the underlying data presented for Mr Meyer's three adjustments, along with the further analyses conducted at my request have shown where there are particular sensitivities in each of Mr Meyer's three adjustments. It is undoubtedly the case that adjustment 3 has the greatest effect. Over the periods Q3,2013-2018 and 2019-2023, adjustment 3 reduces the rate by 3 cents or more. Curiously over the earlier period 2007-end Q2, 2013, adjustment 3 increases the rate by about 3 cents.

792. However, in order to determine what adjustments I should make, I must determine which comparables to take into account.

CONCLUSIONS ON THE COMPARABLE LICENCES

793. For the reasons set out above, I reject all of the InterDigital 20 as relevant comparables.

794. As for the Lenovo 7, as I have already indicated, I consider LG 2017 to be the best comparable and the best place to start. Since it is not without certain problems, it is necessary to examine whether I should take account (and to what extent) the rates implied from the other six PLAs. I will take them in date order.

795. Caution is required regarding Samsung 2014. The largest licensing deal which InterDigital had achieved before that point was with RIM in 2012, but that involved a total royalty payment of around \$ [RED] m. InterDigital had yet to reach a deal with any of the biggest players in the market. However, InterDigital faced a conflict. On the one hand, whatever rates it agreed with Samsung could easily be interpreted as the market rate and InterDigital also knew that it would have to publish information about any licence agreed with Samsung which would enable the market to estimate, fairly reliably, the sort of rates agreed or implied. On the other hand, there was undoubtedly a very significant incentive for InterDigital to agree licensing terms with one of the biggest players in the market *pour encourager les autres*. In these circumstances, there is reason to believe that the rate(s) implied by the Samsung licence are somewhat lower than the FRAND rate for InterDigital's SEP portfolio in 2014.

796. Huawei 2016 came next. It was agreed only about 6 weeks before Apple 2016, but with an effective date of 1 January 2014. Although in some senses, it was overtaken by Huawei 2020, in my view the rate which Mr Meyer derived from it of \$[RED] acts as something of a counterbalance to Samsung 2014.

797. I regard Apple 2016 as an outlier and really only useful as indicating an upper bound. I am inclined to place minimal weight on Apple 2016.

798. After Huawei 2016 and Apple 2016 were agreed (26 August 2016 and 1 October 2016 respectively), the later PLAs in the Lenovo 7 followed at more or less regular intervals: LG 2017 some 13 months later (for which Mr Meyer derived the same rate of \$[RED] as for Huawei 2016), with ZTE 2019 13 months after

that (Mr Meyer's derived rate being \$[RED], a rate I regard as on the low side, but it is a rate derived from relatively low sales data), Huawei 2020 (Mr Meyer's rate \$[RED], also low), 16 months after ZTE and Xiaomi 2021 (Mr Meyer's rate \$[RED]) 15 months after Huawei 2020. Over this period there were various renewals (Panasonic, Wistron) as well as other smaller new licensees agreeing PLAs with InterDigital. As already mentioned, the smaller PLAs were RR agreements.

799. The lower rates derived from Huawei 2020 and Xiaomi 2021 are consistent with the gradual decrease in InterDigital's rates over time and possibly also with InterDigital's lower share of the 5G SEP universe.
800. Another aspect of the Lenovo 7 is the change in the mix of generations over time. Whilst recognising Mr Meyer's criticisms of Mr Bezant's approach and use of data, at a high level of generality, the spreadsheets in Mr Bezant's Appendix 32 provide a rough guide and I observed the following splits between generations from those data:
- i) Samsung 2014, 3G: 2/3, 4G: 1/3.
 - ii) Apple 2016: predominantly 4G.
 - iii) Huawei 2016: 3G: 1/3, 4G: 2/3.
 - iv) LG 2017: 3G: ½, 4G: ½.
 - v) ZTE 2019: 3G: ½, 4G: ½.
 - vi) Huawei 2020: Predominantly 4G, very small proportion of 3G unit sales, relatively small 5G sales, although for the future, 4G:5G is roughly 50:50.
 - vii) Xiaomi 2021: 4G: 40%; 5G: 50%.
801. The change in the rough splits between generations reflects the process of development which continued over the period 2014-2021. These splits may be contrasted with the rough splits between generations in Lenovo's sales over the following three periods:
- i) 2007-2011: 3G: 103m; 4G: 1m.
 - ii) 2012-2018: 3G: 202m; 4G: 186m.
 - iii) 2019-2023: 3G: 2m; 4G: 238m; 5G: 13m. (Mr Bezant's figures only differed for 2022 and 2023, where the balance between 4G and 5G was different 4G: 229m: 5G: 23m).
802. The first period is almost exclusively 3G, the middle period is very roughly equal 3G and 4G and the third period is almost exclusively 4G, with 5G sales just getting going (2020: 1m, 2021: 4m, 2022: 4m / 8m, 2023: 4m / 10m, Meyer / Bezant). This pattern reflects the fact that Lenovo's handset business had a different emphasis to the other top handset suppliers, catering for those who did

not need or want to pay for the latest generation of technology, particularly in Emerging Markets.

803. In reaching my conclusion I have attempted to keep in mind all the various trends and factors I have mentioned above. There are limitations in the data available to me and for that reason I decline to derive rates by generation of technology. To do so would involve too much guesswork or unreliable assumptions. Although, as indicated above, there are many moving parts which are reflected in the data over time (including the sales profiles of each generation, the ASPs by generation, Lenovo's sales profile by generation and so on), I favour applying different rates to different periods of time.
804. It was for this reason that I asked Messrs Meyer and Bezant to construct a calculation model for me (based on Mr Bezant's method of calculating the lump sum implied by the 5G Extended Offer in Appendix 31) which allowed different rates to be applied in three different periods of time, based on the now agreed IDC sales data for Lenovo's sales. The three time periods were those set out in paragraph 801 above.
805. For the period 2012-2018, LG 2017 is plainly the best comparable. Of the others, Samsung 2014 I regard as too low, Apple 2016 is an outlier and I do not regard ZTE 2019 as particularly reliable. The Huawei 2016 rate is consistent with the rate derived from LG 2017, but in other respects Huawei 2016 is far less useful as a comparable because Huawei had a very different sales mix and geographical spread.
806. In terms of adjustments, the data for the slightly different period of Q3, 2013-2018 indicates two contrasting sets of figures for LG when compared with Lenovo:
- i) LG's sales mix over that period (2G: 0%; 3G: 31.4%, 4G: 68.6%) was very close to Lenovo's (2G: 1.4%; 3G: 37.8%; 4G: 60.8%). Mr Meyer derived an adjustment ratio which was close to 1, 0.947.
 - ii) LG's split between Developed and Emerging markets was very roughly the mirror image of Lenovo's – approximately 2/3:1/3, whereas Lenovo was almost 1/5:4/5. On the data, Mr Meyer derived an adjustment ratio of 0.728.
 - iii) These data indicate that Lenovo was selling a higher proportion of 4G handsets into Emerging Markets and at a lower ASP, and much lower sales into Developed Markets generally. I take Mr Bezant's point that lower generation handsets will sell for lower ASPs in Emerging Markets.
807. Accordingly, the most important adjustment is to reflect the split between Developed and Emerging Markets. Overall, I decline to make any separate adjustment to reflect patent coverage. I will apply a single adjustment ratio of 0.728 to reflect all the differences between LG and Lenovo, which brings Mr Meyer's LG 2017 rate of \$0.24 down to \$0.175.

808. For the period 2019-2023, the contrasting sets of figures for LG as against Lenovo show a similar pattern:
- i) LG's sales mix over that period (3G: 0.3%, 4G: 94.1%, 5G: 5.6%) was very close to Lenovo's (3G: 1.2%; 4G: 96.0%; 5G: 2.7%). Mr Meyer derived an adjustment ratio which was close to 1, 0.986.
 - ii) LG's split between Developed and Emerging markets was closer to the mirror image of Lenovo's – approximately 2/3:1/3, whereas Lenovo was almost 1/3: 2/3. On the data, Mr Meyer derived an adjustment ratio of 0.798.
809. Some caution is required over this period because LG's licence term ended at the end of 2020, so the LG data only cover 2 out of the 5 years. However, LG is still clearly the best comparable not least because the sales mixes remain almost identical, whereas the sales mixes under Huawei 2020 and Xiaomi 2021 are very different. Furthermore, the way that the experts unpacked LG 2017 effectively eliminated any influence of LG exiting the market in July 2021. For the period 2019-2023, I apply the same rate as before, \$0.175.
810. In respect of the earlier period of 2007-2011, LG 2017 only provides sales data for 2011. ZTE 2019 is the only LS PLA which provides sales data going back to 2007. In the absence of what I regard as reliable data, I will apply the same rate as for 2012-2018.
811. Although I have found the three periods useful for the purposes of comparison and analysis, and potentially they could have given rise to different rates, I have decided to apply the same rate across all three periods. I am conscious that I have, in the end, relied on a single comparable, but, for the reasons I have explained, I do not regard any of the other Lenovo 7 as assisting. Each one was more different to Lenovo's situation than LG 2017, in some cases, significantly so.
812. Finally, I remind myself of the task in hand. It is to determine what a willing licensor and a willing licensee would agree by way of FRAND terms, in this context a lump sum, to cover the period from 2007 to the end of 2023. In this context, InterDigital's start date of 1st January 2018 is irrelevant.
813. With my decisions on the points of principle in mind, I consider the willing licensor and willing licensee would agree a single per unit rate which would reflect all the considerations I have discussed above. I conclude that rate is \$0.175 per cellular unit.
814. The calculation model provided to me by the experts included sales figures for Lenovo going back to 2007. The \$0.175 rate yields a lump sum payment of \$138.7m.

INTERDIGITAL'S TOP-DOWN CROSS-CHECK

815. InterDigital's top-down case was advanced as a cross check for their 'primary' comparables case. It started with the notion that the cumulative value of all the

royalties which would be paid in an ideal (hold-out free) world on FRAND terms in respect of each generation of technology should not exceed a certain reasonable maximum value. The next stage in the argument is that if one can assume or assess that maximum value for a particular generation, then a reasonable royalty for each licensee to charge can be deduced by reference to that licensee's proportion of the total universe of patents which are assessed as essential to the standard.

816. InterDigital acknowledges that this approach assumes that all such patents are equally valid (or that each portfolio has an equal proportion of assessed essential patents which are valid), and that each such patent is of the same technical benefit. InterDigital also acknowledges that this is a simplification. It asserted that 'it is common ground that it is a virtually universal one for studies of this sort', which I understood to mean for patent counting studies.
817. It is important to be clear as to what this 'simplification' entails. First, I note that this assumption also means that the contribution of any particular portfolio is gauged by its proportion of assessed essential patents to the total, but it seems to me there is bound to be variation in the real contribution to the successful operation of a particular generation of technology between portfolios held by different entities, and this variation may be significant between the most and least 'valuable' portfolios. Thus, this assumption results in a lower value being ascribed to highly valuable portfolios, and a higher value being ascribed to portfolios whose contribution to the successful operation of the standard might be more marginal.
818. Second, it also assumes that all the benefits of a particular generation of technology resides in SEPs, and, perhaps most importantly, in those SEPs covering handset technology. Non-patented (including 'old') technology is ignored, as is the value of the investment in developing, building and operating the network infrastructure.
819. Third, bearing in mind the experts agreed that overdeclaration of patents as Standard Essential to ETSI was a problem, it assumes overdeclaration occurs uniformly. It seems to me that overdeclaration will depend on (a) the extent to which a licensor relies on patent counting studies and (b) its perception of the strength of its portfolio. It may be that those SEP licensors with weaker portfolios engage in greater over-declaration than those with stronger portfolios.
820. I consider it is important to keep these points in mind as I proceed through the various parts of this top-down case.
821. How this operates as a cross-check is that one takes a posited InterDigital royalty rate and multiplies it up in proportion to InterDigital's share of the universe of patents assessed as essential for that generation of technology. This generates an implied royalty for the total stack (referred to as the 'aggregate royalty burden' or ARB_{TOTAL}). As InterDigital submitted, the calculation is simple:

$$ARB_{TOTAL} = ARB_{InterDigital} / Share_{InterDigital}$$

822. The appropriateness of the ARB_{TOTAL} can then be assessed, so the argument goes, by reference to other statements of the approximate size of the ARB_{TOTAL}, either from third parties or from the hedonic regression analysis which formed the major part of this top-down case.
823. InterDigital characterised a hedonic regression in outline terms as follows. It is an econometric analysis which seeks to isolate the fair market value of each of the technology generations over the previous, all other things being equal ('ceteris paribus'). Thus, holding the screen size, processing power, brand and an array of other features of a device steady, it seeks to answer the question '*how much more is a phone worth by reason of the presence of the new technology generation*'. In outline, hedonic analysis does so by identifying the variables assessed as being relevant to the price of a mobile device, including the fair value of the technology generation, and through a regression analysis of a substantial enough data set assigning to each a fair market value.
824. InterDigital did not suggest that its top-down analysis provides a single specific answer for a 'correct' rate for InterDigital's 3G, 4G and 5G portfolios but rather an answer indicative of the range of reasonable rates consistent with InterDigital's FRAND undertaking.
825. Thus, the major inputs to this part of the case are (a) certain patent counting studies (b) the hedonic regression analysis conducted by Dr Putnam (c) certain public statements by third party companies in the industry and (d) previous views expressed by various judges as to the appropriate size of the total industry stack (or the appropriate range). In theory, it is necessary to assess the reliability of each of these inputs (and all the arguments thereon) but to do so would significantly lengthen this judgment.

The patent counting studies

826. InterDigital relied on five patent counting studies, four of which were prepared by PA Consulting, and the fifth by the Cyber Creative Institute.
827. There is no doubt that PA is well-known in the industry. It identified a market opportunity in the early 2000s for an independent report which assessed the essentiality of patents disclosed as essential or potentially essential to ETSI. Over the years PA has produced reports covering 3G, LTE, LTE-A and 5G, and InterDigital relies on each of these.
828. The evidence I received from Ms Ancha of PA established that the costs of developing, updating and supporting the LTE and LTE-A reports is substantial and estimated to be in the region of £5m. The reports are produced by experts working for PA with experience in the telecoms field developing software and firmware for 2G, 3G, 4G and 5G handsets, test equipment and infrastructure. They also assist clients with their strategies in those technologies and with negotiation, arbitration and litigation relating to IP rights, including developing claim charts and essentiality evaluations. These reports are widely used in the industry, in the sense that, for example, nine of the top ten patent holding companies have purchased the LTE report, and access to them comes with a

substantial price tag. That point, however, rather begs the question as to what those companies use the reports for.

829. The PA reports indicate that their analysis errs on the side of caution, categorising patents as essential even where there is 'some small doubt'. Notwithstanding that, the PA 3G Report identified that just under 3,900 patents and applications had been declared as essential to ETSI, and indicated that they found around 17% to be essential.
830. In the entry relating to InterDigital in the PA 3G report (Version Q, dated May 2015), it records that out of a total of 610 declared assets, unique disclosures numbered 530. Of those, 459 patents and applications were analysed, of which they found 133 to be essential (i.e. 28.98%), comprising 75 granted patents and 58 applications (obviously at the time of the report). If extrapolated to all patents and applications declared by InterDigital, the total predicted assets would be 153. PA's conclusion was that InterDigital appears to hold 9.45% of the SEP landscape.
831. The PA 3G Report contains a brief commentary on the holding of each company. In relation to InterDigital, this commentary reads as follows:

'InterDigital's Essential patents focus on a few areas of the 3GPP-FDD standard, predominantly in the physical layer:

- spreading and modulation
- range measurement and Round Trip Time
- soft combining at the RNC HSDPA, specifically MAC-hs status report and HS-SCCH code generation
- Power control in the PRACH and its preamble.

InterDigital's patent holding consists mostly of general patents covering fundamental physical layer concepts such as spreading and modulation, soft combining. This makes some patents more open to interpretation than other companies (e.g. Ericsson, Nokia) which have patents tied specifically into 3GPP-FDD features. Some more recent InterDigital patents are more specific, covering details of HSDPA.

Many InterDigital patents are variations on a theme: individual patents are continuations or divisions of a master patent. Thus, though InterDigital appears to have a substantial patent portfolio, many of the patents within this portfolio are very similar and there are only six or seven basic "inventions" underlying the 50-60 Essential patents.

Some of InterDigital's patents are very "old" having been filed in the late 1980s by its predecessor SCS Mobilcom.'

832. The PA reports for later generations do not include any equivalent commentary. PA's LTE Report is dated September 2018 but based on some [RED] declarations to ETSI to the end of June 2016, supplemented by a further [RED] derived from searches of patent listings supplied to PA by major companies in the field. In relation to InterDigital, there were 962 entries, of which PA assessed there were 912 unique disclosures. 538 were evaluated (374 were not), of which 206 (38.29%) were found essential (332 not), comprising some 138 patent families and 18 application families. PA's conclusion was that InterDigital appeared to hold 8.84% of the LTE SEP landscape. Extrapolation to all InterDigital's declared assets would suggest total essential assets of 349 patents and applications or 13%.
833. PA's LTE-A report is also dated September 2018 and is identified as an Addendum to the LTE report. It covers some [RED] patents. InterDigital is identified as having 147 entries, of which 146 were evaluated. PA found 53 to be essential (93 not). PA concluded that InterDigital appeared to hold 10.13% of the LTE-A SEP landscape and around 9% of the LTE +LTE-A SEPs declared to ETSI.
834. The PA 5G report is dated March 2021. Version B contains PA's essentiality analysis based on a sample of 5G patents declared to ETSI down to [REDACTED]. Out of a total of [RED] granted patents identified from unique patent families declared to ETSI, PA's sample numbered [RED]. Their analysis suggested an essentiality rate of around [REDACTED] they derived for LTE. Their suggested explanation was [REDACTED]. InterDigital is identified as holding 416 5G families with granted patents, of which 59 families were evaluated and 30 found to be essential. Of those, only 7% were unique to 5G. Overall, PA concluded that InterDigital appeared to hold 3.96% of the 5G SEP landscape.
835. The Cyber Creative Institute is an independent Japanese consultancy company which, for understandable reasons, has more of an Asian focus. It produced an LTE patent counting study, which InterDigital also relied upon.
836. In cross-examination and in its closing arguments, Lenovo sought to undermine the validity and usefulness of these patent counting studies, relying on evidence from several of the witnesses. I can give a flavour here of the passages which Lenovo fastened upon:
- i) Mr Brismark: 'there is no need to know who has the highest number of patents.'; '...valuation is not a numbers game.'
 - ii) Mr Djavaheerian indicated that parties focus on claim charts and proud lists rather than considering whether the patentee has x% of the standard. He also pointed to patentees having differing 'hit rates' in terms of validity.
 - iii) Dr Putnam agreed that 'The size of a portfolio is, by itself, not a good predictor of the royalty payment.'

- iv) Mr Peters agreed that portfolio valuation was not a numbers game, and that you get higher value and lower value patents. He explained that a top-down analysis might be of some use when you are ‘starting from scratch’ but agreed that when you have a track record, you look at that.
- v) Lenovo also put to Mr Merritt an article written by him and published in April 2018 in which he was critical of courts using ‘hypothetical’ approaches instead of ‘first assessing what other companies have paid for a relevant license’. In cross-examination, Mr Merritt agreed that the Court should focus on comparable licences ‘because it reflects price discovery in the industry [and] is a really, really solid way of looking at what a portfolio is worth’.
- vi) To similar effect was this statement in an *amicus* brief which InterDigital submitted to Judge Selna in *TCL v Ericsson*:

‘Real world market outcomes are the most probative of value, and consequently analysis of comparable licenses should be the preferred method of analyzing FRAND terms. Resort to ‘top-down’ and other patent analysis methods, when comparable licences are available, is unwarranted, particularly in the light of the many sources of unreliability inherent in attempting to analyze the contributions of literally thousands of patents to an industry standard.’
- vii) Mr Peters agreed with this statement, subject to a point about the purpose of the analysis. He appeared to suggest it depended on whether the value of the patents was taken into account or not, but that did not deflect from the basic message.

837. As InterDigital submitted, Lenovo’s criticisms were undermined by the fact that Lenovo’s expert on this aspect of the case, Dr Kakaes, had himself produced an essentiality analysis in *TCL v Ericsson* which he had presented as being robust, reliable and giving statistically relevant results and which Judge Selna relied upon in his judgment. InterDigital’s point was that the patent counting studies they relied upon are well comparable to the approach which Dr Kakaes took in *TCL v Ericsson*.

838. For reasons which appear below, it is not necessary for me to resolve all the myriad points raised and responded to in the closing submissions on the patent counting studies. Without deciding any of those points or the reliability generally of these patent counting studies, I am prepared to assume that, subject to the critical assumption I have already identified, they provide estimates of InterDigital’s share of the assessed handset SEPs attributable to each generation of technology.

839. Thus I will proceed on the basis of the InterDigital shares provided by the five studies as summarised below:

Report	PA 3G	PA LTE	PA LTE-A	CC LTE	PA 5G
IDG Share	9.5%	9-13%	10%	7%	4%

Hedonic Regression

840. I will start by outlining how this part of the case was presented by InterDigital in closing.
841. InterDigital presented this part of its case on the footing that hedonic regression was a well-established econometric tool and that it was common ground between the experts (Drs Putnam and Wang) that a well-constructed linear regression model is a reliable and useful tool which *can* provide useful and reliable insights (my emphasis).
842. InterDigital also presented Dr Putnam’s model as ‘conservative’ because the comparison used is between the value of a multimode licence (i.e. 3G multimode, 4G multimode, 5G multimode) which therefore licenses the lower generations also, against the total royalty stack attributable to that single generation only.
843. A feature of InterDigital’s case, which manifested itself at various different points, was the suggestion that the approach being taken at that point was ‘conservative’. This is a beguiling concept but one which needs to be treated with some care. This submission often emerged when a range of values emerged at a particular point in analysis and InterDigital proceeded by taking lower values in the range, commending this approach as ‘conservative’. However, merely branding the lower values selected as ‘conservative’ does not lend validity to those values. Instead, one has to assess the analysis or stage in the analysis which led to the range, from which InterDigital make their ‘conservative’ selection. Often, it seemed to me, the ‘conservative’ selection was one which was designed to eliminate values which were or which appeared to be too high, and to select values which ‘fitted’ with the rest of InterDigital’s case.
844. The end results of the hedonic regression analysis were presented as follows:

	3G	4G	5G
Premium	26%	21%	21%
Royalty Stack	13%	10.5%	10.5%

845. As Lenovo pointed out, these results omit to specify to what these percentages are applied. In InterDigital’s analysis, they are applied to an industry average ASP of a phone of the relevant generation (see further below).
846. Of the total royalty stack for each generation of technology, InterDigital’s share was stated to be as follows (derived from the patent counting studies):

	3G	4G	5G
InterDigital share	9.6%	9.1%	3.7%

847. The actual cross-check was presented as follows by InterDigital.

- i) First, the starting point was two 4GMM rates implied by the LG licence, calculated on Mr Bezant’s approach. These were \$1.01 (low) and \$1.67 (mid).
- ii) Second, Mr Bezant used an industry average ASP of \$220 which implied a 4GMM ad valorem rate of 0.46% (i.e. 1.01/220) and 0.76% (1.67/220) respectively. This industry average ASP was calculated by Mr Bezant from 46 handset prices in 2020.
- iii) Third, InterDigital bring in their share of the total 4G universe. Using the ‘patent’ definition, InterDigital owns 259 of the total 4G (LTE and LTE-A) universe of 2853 i.e. 9.08%. Alternatively using the ETSI definition of ‘family’ the total 4G universe is 2517, of which InterDigital own 185, giving an InterDigital share of 7.34%.
- iv) Fourth, those inputs are then ‘scaled’ to the total stack as follows:

	LG Low	LG Mid
“patent”	$\frac{0.46\%}{9.08\%} \times 100 = \mathbf{5.07\%}$	$\frac{0.76\%}{9.08\%} \times 100 = \mathbf{8.37\%}$
“family”	$\frac{0.46\%}{7.34\%} \times 100 = \mathbf{6.25\%}$	$\frac{0.76\%}{7.34\%} \times 100 = \mathbf{10.35\%}$

- v) The final stage is InterDigital’s submission that all of these total implied aggregate 4GMM industry stacks are reasonable. InterDigital submit that they compare very favourably with the appropriate total 4GMM stack in *Unwired Planet* of 8.8%.

848. Although I have not adopted Lenovo’s output from the comparables case, InterDigital presented it as a relevant comparison. Again, using the industry average ASP of \$220 implied and an ad valorem rate of 0.07%. When that is scaled to the total stack, using the same approach as above:

Lenovo’s case
$\frac{0.07\%}{7.34\%} \times 100 = \mathbf{0.95\%}$

$$\frac{0.07\%}{9.08\%} \times 100 = \mathbf{0.77\%}$$

i.e. a total stack for the whole of 4G of < 1%.

849. InterDigital are, understandably, very keen on this 4G analysis but I should mention the outcomes of the 3G and 5G analyses.
850. So far as 3G is concerned, the two input rates from Mr Bezant's analysis of the LG licence were \$0.49 (low) and \$0.81 (mid). The industry average ASP was \$43. The total 3G universe of patents was 1409, of which InterDigital own 135 giving a share of 9.58%. When scaled to the total stack, the outputs were 11.9% (low) and 19.62% (mid), whereas the \$0.16 royalty from Lenovo's case yielded a figure of 3.86%.
851. So far as 5G is concerned, the two input rates from Mr Bezant's analysis of the LG licence were \$1.20 (low) and \$2.00 (mid). The industry average ASP he used was \$505. The total 5G universe of patents is 5869, of which InterDigital own 217 giving a share of 3.70%. When scaled to the total stack, the outputs were 6.49% (low) and 10.81% (med), whereas the \$0.16 royalty from Lenovo's case yielded a figure of 0.81%.
852. Mr Speck KC for InterDigital acknowledged that the 3G outputs were 'higher than one would hope' and were perhaps not so reliable because the LG licence was a later licence – 2017. By contrast he submitted that the 4G and 5G results were 'on the money'.
853. Since the rate I have derived from the comparables analysis is close to, but slightly above Lenovo's output, I recognise that my single rate gives figures for the total stack which are only slightly above the figures calculated using Lenovo's output.
854. In closing, Lenovo submitted there were four fundamental problems with adopting the hedonic regression analysis based on the materials used in this case.
855. Lenovo's first point was the entire exercise was devoted to establishing a value averaged across all brands and over the last 10 years when, as Dr Putnam agreed in cross-examination, the value of LTE varies by brand and by model. Accordingly, Lenovo submit that the output of the model is of very little utility in setting a licence for a particular implementer with a particular ASP and at a particular point in time. In particular, Lenovo pointed out that different companies take advantage of the standards at different times. They submit that this is reflected to an extent in licensing which uses a percentage royalty – so that implementers who are able to sell at higher ASPs pay more.
856. Lenovo also point out, as is the case, that the mobile phone market in a particular generation of technology is one in which ASPs and resulting profit margins vary

enormously – Apple being the prime example. Lenovo presented data from 2021 which shows that whilst Apple has 14.2% of the smartphone market in terms of shipments, it makes 41.2% of all revenues and 77.4% of profits. All other companies in the smartphone market operate at very different levels. Indeed, as I point out elsewhere, because of Lenovo’s geographical sales, they continued to sell significant quantities of 2G mobile phones until their 2G models were finally sold off as late as 2019. Lenovo continued to sell significant quantities of 3G phones into 2019.

857. Lenovo therefore poses this rhetorical question: how can it be right for every implementer to pay for the value in LTE calculated by this model (averaged across everyone in the market), when it may only be achieved by those implementers with the highest ASPs (including Apple). Or, to put the point in a less tendentious way, the value in LTE calculated by this model, precisely because it is an average value, will have been pulled up by those implementers with the highest ASPs and will therefore provide a value which is too high for those implementers lower in the market.
858. Lenovo’s second point was that Dr Putnam’s analysis was based only on retail and not wholesale prices. Their point was that his analysis therefore appeared to assume that retail margins were the same between various companies and over time. In their closing, Lenovo presented a comparison between the InterDigital data (retail prices) used by Dr Putnam and the Strategy Analytics data (wholesale prices). As Mr Chacksfield KC pointed out, the raw data was put in cross-examination but not the calculations of the various mark-ups of different companies. I am sure that InterDigital would have pointed out if there were any serious errors in the Lenovo calculations. In any event, the precise mark-up calculated for each company in each year is not really the point. The point is that there is significant variation in the retail mark-up, as one would expect although the actual pattern is something of a surprise. Some companies (both those at the top (Apple) and those with some of the lowest ASPs (e.g. realme)) have low, sometimes single figure % mark ups. Others, including Lenovo and LG have much higher mark-ups, nearer to 50%. Certainly, as Lenovo submitted, the data established there is no consistent mark-up across the industry, and this undermines the utility of the figures produced by Dr Putnam’s analysis.
859. Lenovo’s third point is one I have already mentioned. Dr Putnam’s analysis assumes that *all* of the value to the consumer of a particular standard can be attributed to SEPs. Lenovo submit there is no basis for such an assumption. They also point out it is contrary to Dr Kakaes’ conclusion in *TCL v Ericsson*, where in his report in that case he referred to significant parts of the standard relied on old (i.e. non-patented) technology.
860. As I indicated above, I consider the point goes wider. Dr Putnam’s analysis assumes that all of the value to the consumer of a particular standard can be attributed to SEPs. Even if these also implicate all the network infrastructure (as to which the standards are much less prescriptive), his analysis appears to me to arrogate to the SEPs the value represented by the huge investment which must be made in developing, building and running the network infrastructure (whether the technologies used are patented or not).

861. Lenovo's fourth point is one that has always troubled me. It concerns the treatment of the output of Dr Putnam's model i.e. the so-called premium for 3G, 4G or 5G technology. Dr Putnam's first report concludes in this way:

'161. Conceptually, the premium for 3G, 4G or 5G technology in a handset is divided between the seller of that technology (the SEP holder) and the buyer (an SEP licensee), in the form of royalties that the buyer pays to the seller. Those royalties then form part of the cost of manufacturing the handset, which in turn helps determine the handset's price. The cellular premium, which is revealed in the transaction between the SEP holder and the handset manufacturer, simply describes the market value of the gain from standardised technology that SEP holders and manufacturers divided between them.

162. The question remains whether and how much of the premium should be captured by SEP licensees as opposed to by SEP holders. There is no clear economic answer to this question: under ETSI rules, the royalties charged by SEP holders must be "fair and reasonable"; SEP holders are also entitled to be "adequately and fairly rewarded" for their innovations. Taken by itself, "fairness" does not have an independent economic definition.

163. In my view, a reasonable split would be 50/50 between SEP licensees and SEP holders. A 50/50 split can be justified on multiple grounds. [fn 48] It could be seen as a conservative choice for SEP holders: there is no reason to believe that implementers deserve *more* than 50% of the gains from implementing a standard that they did not create. [fn 49]

FN 48 For example:

1. Under very general conditions, economic equilibrium implies an equal division of the gains from trade if bargaining positions are symmetric. As I have explained, ETSI rules require "fair" terms for both innovators and implementers. Therefore, if these two groups bargained with each other, we might expect an equal division of the gains.

2. In experimental economic studies of bargaining over the division of a surplus, equal division is frequently observed, with "fairness" being the usual justification.

3. Many telecommunication firms are both implementers and innovators, and so must adopt the bargaining positions of both. For example, in taking the position that royalty rates for *patents* should be "high," a firm would simultaneously advocate that it should pay higher royalties to its rivals on the sales of its own *products*, increasing their cost and reducing its profits. These countervailing internal forces balance the opposing demands of innovators and implementers.

Fn 49 Implementers already gain through the profits they make on additional sales of units that practise the new standard. Awarding them a share of the premium is thus an *additional* gain.’

862. InterDigital are right to point out that Dr Wang did not respond to this part of Dr Putnam’s report. Although Dr Wang did not explain why she did not comment on it at all, in my view, it might well have been because she did not feel this aspect fell within her expertise. Notwithstanding the issue of the lack of evidential challenge, there remain a number of problems, in my view.
- i) First, Lenovo submitted that this 50/50 split was completely arbitrary, pointing out there was no evidence (nor any analysis) of how this split reflects risks, costs or profitability. They point out that InterDigital has been consistently profitable over the years whereas other companies making and selling mobile phones have had to exit the business altogether or have made huge losses. They suggest that this indicates it is far less risky to be a SEP holder than a manufacturer. This was a topic raised in cross-examination with Dr Putnam and although he disagreed about the risk profile, he accepted he had not done any analysis, notwithstanding the fact that his regression analysis was based on assumptions regarding value to implementers, risk adoption between SEP holders and implementers and the relative value of SEPs compared to the standards as a whole. In fact, Dr Putnam was prepared to assume that R&D was at least as risky, if not more so, than manufacturing but this was yet another assumption. Dr Putnam was correct to say that one could not take account of the profitability of individual manufacturers, because that would involve discrimination, but the general point remains.
 - ii) Second, Dr Putnam’s 50/50 division of the ‘gains’ once again proceeds on the assumption that *all* of the value to the consumer of a particular standard can be attributed to SEPs, an assumption I do not consider to be valid, in view of the facts that the successful operation of the technology of a particular generation depends not just on the SEP technology in handsets, but also the network infrastructure technologies and other technologies in the handset which are not or no longer patented. Furthermore, and notwithstanding Dr Putnam’s justifications for taking a 50/50 split, I consider this and his justifications to be far too simplistic. A proper analysis of the appropriate split between SEP holders and implementers could easily justify a PhD thesis and probably years of research.
863. InterDigital made the point that none of Lenovo’s witnesses proposed any alternative split but I see no reason why they should have done so.
864. The final point concerns how this critical step came into this case. InterDigital’s FRAND Statement of Case identified their top-down cross-check as involving two approaches – hedonic price regression and total aggregate royalty. The hedonic price regression is pleaded as involving the following steps:

- i) Take the royalty rates sought by InterDigital for Lenovo's 3G, 4G and 5G units.
 - ii) Identify InterDigital's % share of 3G, 4G and 5G SEPs.
 - iii) From those two steps, identify the implied total aggregate royalty payable by a licensee for all SEPs for 3G, 4G and 5G units.
 - iv) Compare that total aggregate royalty with the value of the technology represented by each of the 3G, 4G and 5G technologies derived using hedonic price regression. This comparison is pleaded as '*conservative, in that the comparison is between the total royalty rate for a 3G, 4G and 5G multimode device against the stack for only the highest generation technology supported in that device.*'
865. The 'total aggregate royalty' approach is explained as involving the first three steps above. Then the fourth step is a comparison between the total aggregate royalty for each generation with public information about the range of values for a total royalty stack referred to in *UPHC* and other sources. These are identified later as:
- i) *UPHC*, 3G, 5.6%. 4G, 8.8%.
 - ii) The public statements identified in *UPHC* which InterDigital allege systematically understate the appropriate total but imply total aggregate royalty of at least 5-10%.
 - iii) In relation to 5G, InterDigital allege that the aggregate royalty for a 5GMM device should be greater than for devices which only implement prior standards.
866. Under 'Particulars of the Total Value of 3G 4G and 5G Technologies', the hedonic price regression is explained in outline and the resulting percentage premiums (as set out in paragraph 844 above) are given i.e. 26%, 21% and 21%, each expressed as +/- 2%.
867. Then, illustrative examples of the methods of top-down analysis are presented for each of 5G, 4G and 3G. It is only necessary for me to discuss one of these, because all three have the same basic structure. The 4G example takes 9% as InterDigital's share of all 4G SEPs. The 0.45% rate in the 5G Extended Offer implies a total aggregate royalty of 5%. Then:

'The Claimants note that this analysis is conservative in that it has no regards [sic] to the applicable cap, and also that the comparison is between the total royalty rate for what in practice will ... be a 4G multimode device against the stack for only the 4G technology supported in that device.

The said 5% implied total aggregate royalty for 4G Licensee Terminal Units... is significantly lower than the value of 4G

only, as identified above (i.e. 21% of the price of relevant devices....

868. Thus, the use of the premiums derived from the hedonic price regression is as a ceiling against which the implied total aggregate royalty for each generation is compared, in a rather general way. Although the ‘stack’ is mentioned in the description of the fourth step above and in each illustrative example, the materials relied upon as fixing or estimating the stack are those summarised in paragraph 865 above. There is no suggestion that the premiums derived from the hedonic price regression are going to be used to derive values for the stack. In particular, there is no pleading from InterDigital that the stack can be estimated from the results of the hedonic price regression by taking half of each of those premiums.
869. Furthermore, it may be noted that InterDigital’s top-down cross check, as pleaded, involved only the application of the rates in the 5G Extended Offer. No reliance was placed on the rates unpacked from any particular PLA or set of PLAs, let alone LG 2017 in particular.
870. Yet, as I have endeavoured to explain above, Dr Putnam’s 50/50 split now appears to be *the* critical step in this part of the top-down cross check, applied only to rates derived from LG 2017. Reliance on the premiums derived from the hedonic price regression has morphed from those premiums being used as a rather general upper bound to *the* critical step.
871. If the 50/50 split had been pleaded, as it undoubtedly should have been if it was going to be relied upon, then Lenovo would have been able to reflect on this and develop their pleading and evidence in response. InterDigital would no doubt point to the period between service of Dr Putnam’s first report (6th October 2021) and service of Dr Wang’s report in answer (25th November 2021) or even the start of trial, as giving Lenovo a sufficient opportunity to consider and react to this. Such a contention would approach matters the wrong way around. It was always for InterDigital properly to identify their case in its FRAND pleading. Furthermore, I have no doubt that October 2021 onwards was an intense period of activity. In that period virtually all the expert evidence was served.
872. For all these reasons, I do not feel able to adopt Dr Putnam’s 50/50 split, nor any other.
873. Although what I have already said is sufficient reason to reject InterDigital’s top-down cross check, Lenovo developed a series of additional submissions as to why nothing needed to be decided on this part of the case, other than to say that the top-down analysis adds nothing of value to the conventional market-based valuation.
874. First, Lenovo pointed out that Dr Putnam is a hedonic regression enthusiast (which is true), and that he is keen to sell this type of approach to antitrust authorities in the US. They suggested he has a vested interest in getting the Court to accept his analysis which would give his approach credibility elsewhere. Although Lenovo accepted that the mathematical technique is well-

established, the use of hedonic regression as a method for identifying value in this context has not been accepted by the US antitrust authorities. Lenovo also submitted that no-one suggests that it is an established methodology for valuation of patent portfolios in this context. This submission was incorrect. In response, InterDigital pointed to a passage in Dr Wang's evidence where she said: '*While it has limitations in this application, it has recently started to be applied in evaluating SEPs in telecommunication matters alongside other traditional valuation methods.*' Indeed, the Nanjing Intermediate People's Court in *Huawei v Conversant* (2018) Su 01 Min Chu No. 232, 233 and 234, adopted a hedonic price model which was used to estimate the value in the Chinese market of 3G mobile phones (12.52%) against the value in major developed countries (28.82%). That Court also referred to and relied upon the 'accepted international aggregate rate' for 3G as 5% and for 4G as 6-8%.

875. Lenovo also submitted that no-one from InterDigital had suggested that any licensor or licensee has used this type of hedonic regression as a method of deciding what price should be paid for rights in issue, neither had any of the licensing or accountancy experts.
876. Second, Lenovo stressed that, in so far as the Court was being invited to take some abstract approach to determining on a global basis the value of each standard is to consumers, and, indirectly, the industry as a whole, it was an exercise in which the whole industry should be involved, and possibly antitrust regulators as well.
877. Third, Lenovo submitted this has a comity aspect to it, in the sense that the more 'general' a method is, the greater the justification for involving other courts and regulators in relevant countries in determining whether it is to be used. Lenovo presented an example from Dr Putnam's own evidence, where what they characterised as 'a tiny tweak in his analysis (moving the date from 2019 to 2020) changed one of his key numbers from 21% to 18%, with the potential impact (if aggregated) of hundreds of millions if not billions of dollars worldwide.
878. Although there was an element of hyperbole in some of these points (particularly the second), nonetheless they have considerable force. If I retreat to a more conventional viewpoint – that of this Court's general procedural rules – it struck me that the hedonic price regression analysis was an experiment which was inserted into this trial via expert report without any of the usual procedural safeguards being observed.
879. Leaving aside the pleading, the most important procedural safeguard lies in the rules which are often applied in patent cases where one or more facts are sought to be proved by experiments. Counsel and solicitors involved in this case on InterDigital's side are well aware of these rules yet chose to ignore them. I found it moderately surprising that those representing Lenovo did not raise this objection as soon as they had digested Dr Putnam's first report, but I realise that, at that late stage in the run-up to trial, the emphasis can often shift to simply trying to get on top of all the issues in the case and marshal an expert's report in response.

880. If I leave the hedonic price regression out of account, as I have done, that leaves a much simpler top-down case. As pleaded, it is a comparison between the implied royalty rates for each generation against certain public statements. In *UPHC*, Birss J. placed reliance on the decision of the IP High Court in Japan in *Samsung v Apple* in which the Court used an aggregate royalty burden of 5% for 3G. The rates which Birss J. found resulted in implied total royalty burdens of 5.6% for 3GMM and 8.8% for 4GMM, which he considered fell within an appropriate range. InterDigital also referred to the range of 6-10% which Judge Selna adopted in *TCL v Ericsson* and I have referred to the total royalty burdens used by the Chinese Court in *Huawei v Conversant*.
881. However, I remain unpersuaded by any part of InterDigital's top-down analysis. The principal reason is because of InterDigital's overall contention that the top-down analysis supported the rates in their 5G Extended Offer. Since the comparables analysis does not provide any support for those rates, and I have found those rates to be inflated and discriminatory, the results of the comparables analysis represent a solid reason for dismissing InterDigital's top-down cross-check as pleaded.
882. I can deal briefly with the alternative top-down cross-check presented in InterDigital's closing based on the rates derived by Mr Bezant from LG 2017. In the comparables analysis, I rejected Mr Bezant's methodology for deriving 'future only' rates. I have also rejected the future only ranges of rates derived from LG 2017, for the same reasons - see paragraph 619 above- In the analysis set out in InterDigital's closing, I recognise that the rates they derived from LG 2017 gave rise to sensible figures for the overall stack for 4G and 5G, but figures which were too high in respect of 3G. Those outcomes indicate there is a problem or problems elsewhere in the analysis.
883. There are some additional problems with InterDigital's contentions. First, it strikes me that the use of industry average ASPs from 2020 entails a very crude analysis. Second, having regard to my comparables analysis above, I am unable to tell whether, on this part of the case, any account is taken of differences between Lenovo's sales patterns and those of the industry in general.
884. Overall, in view of my clear rejection of the way in which InterDigital's rates were derived, it is not necessary for me to locate all the possible problems. It suffices to note that over 97% of the cellular units licensed by InterDigital are licensed at rates which are multiples less than even the rates which InterDigital sought to derive from LG 2017.
885. I realise that my conclusion may imply that the patent counting studies on which InterDigital relied are not a reliable guide to the value to be attributed to their portfolio, but there are many reasons why that might be the case. It may also be the case that other inputs (e.g. the ASPs) were inappropriate. It is not necessary to explore those reasons any further.

THE RESPECTIVE CASES ON CONDUCT

886. By way of a brief reminder, under this heading I consider (in so far as is necessary) the respective allegations regarding the conduct of each side. As will

appear, I do not find it necessary to descend into the detail of the negotiations to the extent it occurred in cross-examination.

THE NEGOTIATIONS

887. I will first give an overview of the progress of the negotiations before turning to assess just a few particular points.
888. The first contacts between the parties took place in late 2008. It is true that initial progress was slow. In particular, an NDA was not signed by Lenovo until February 2010. After that, certain claim charts were provided by InterDigital in May 2010, shortly before a meeting that month. Further claim charts relating to Chinese patents were provided by InterDigital in June 2010 along with InterDigital's first offer on 29th June 2010. The licence on offer was for the life of the licensed patents, with the royalty for 2G handsets at 1% of the 'Deemed Price' (which for present purposes can be taken as the actual selling price) and 1.85% for 3G handsets. Lenovo pointed out that InterDigital does not seek to defend this offer as FRAND and contended that this offer does not bear any relation to the offer(s) which InterDigital now seeks to contend are FRAND, a contention I accept.
889. InterDigital's Second Offer was made in February 2011. I only have some details of this offer, namely: 4G only at 2% of Deemed Price (\$1.50 floor and \$4.00 cap); 3G/4G multimode at 2.5% (\$2.50 floor and \$4.50 cap); with China attracting a 20% discount for 2G, 10% for 3G and no discount for 4G.
890. As Lenovo pointed out, in connection with the First and Second Offers, there was no mention of any volume discounts, term discounts or the option to pay a lump sum (and receive a discount for that).
891. The negotiations culminated in an email dated 10th June 2011. InterDigital characterised this email as the 'thanks but no thanks email' – in other words that Lenovo rejected the possibility of being licensed by InterDigital and evinced an intention not to work InterDigital's SEP technology under a licence. This was presented as one of the, if not the, highpoint(s) of InterDigital's case that demonstrated that Lenovo was an unwilling licensee. In view of the importance placed by InterDigital on this email, it is necessary to have regard to what the email actually said and the response to it. The email, from Scott Reid, Senior IP Counsel at Lenovo to Shival Virmani at InterDigital reads as follows:

'We appreciate your patience and efforts to work with Lenovo on this issue, John asked me to let you know that, given the royalty demands Interdigital is making, we are unable to accept your current offer or make a meaningful counter-offer at this time. We will continue working through these issues internally with respect to your portfolio and the many others that allegedly impact this same technology. If Interdigital modifies its licensing practices or royalty model in the future, please let us know.'

892. The response from InterDigital came more than six months later, in an email dated 30th January 2012 from Brian Hinman (since Mr Virmani had left) to Scott Reid.

I know that you have been in discussions with Jim Mackenzie on my team to conclude a patent license with Lenovo. I am hoping these discussions can progress fairly quickly, as I know there has been some significant delay.

Just to let you know that on January 23rd, InterDigital formally announced that our Board of Directors concluded the review of strategic alternatives (see attached press release). The process began approximately six months ago and after conducting a very diligent and comprehensive process, the Board determined that it was in the best interests of the company and its shareholders to execute on the company's business plan and to expand the plan to include patent sales and licensing partnerships. This expansion of our business plan includes potential opportunities for targeted sales and/or partnering arrangements for non-core portions of our substantial and growing patent assets. Going forward we will aggressively pursue patent sales and/or licensing partnerships in the areas of mobile infrastructure and select 3G and LTE terminal unit patents which are not necessary to drive our core terminal unit licensing business. I encourage your company to work expeditiously to conclude our licensing discussions as soon as possible.

893. Scott Reid responded the same day, saying:

‘I believe this is the first communication we have received from your company in over 7 months. In addition to the passage of time, I also understand that Interdigital has been involved in several litigations which may have impacted the patents you were previously asserting against Lenovo.

If you would like to re-open our discussions I would expect an updated assertion/patent package for us to review – as well as an updated royalty offer....so that we are all starting on the same page.

On another note, you mention below that Interdigital’s strategy is going to include the sale of patents. Lenovo would be interested in being involved in the review of any portfolios which you are going to offer for sale – especially any including wireless essential patents.’

894. After further emails about contact on the possible sale of patents and Brian Hinman indicating that a colleague, James MacKenzie would be in touch, the next relevant email was from Mr MacKenzie to Scott Reid on 20th February 2012. I mention this particular email because of an answer given by Mr Virmani in relation to it. Having been given time to read the email, Mr Virmani said ‘I

do not find this terribly reasonable. I find this as a means of continuing to ask for information that they are not necessarily going to use as a way of continued delay, is my personal opinion.’ However, the email was sent by Mr MacKenzie (from InterDigital) to Scott Reid (at Lenovo). Mr MacKenzie raised three points: (1) the need to extend the NDA which had expired; (2) that InterDigital would be happy to provide a ‘new assertion package’ and (3) that he would like to set up a meeting ‘to get things restarted’. As I have explained, the background to the email of 20th February 2012 was that it was InterDigital which had not been in contact for 7 months. It is evident (from the 30th January 2012 email) that InterDigital had been engaged in their ‘review of strategic alternatives’, a process which had taken about 6 months and which had recently concluded. Mr Virmani’s answer was completely unreasonable.

895. More broadly, InterDigital did modify its licensing practices (and took some time doing so) and then came back to Lenovo. In view of the fact that the ‘current offer’ was, in my view, seeking rates which were significantly above any FRAND range, I find Lenovo’s responses over this period to have been reasonable. InterDigital contended that a willing licensee would have made a counter-offer but the lack of a counter offer is understandable at a point when Lenovo had relatively little information about the sort of rates which InterDigital was actually licensing its portfolio.
896. At this point I turn to summarise the various offers made over the extended period of negotiation.

THE OFFERS MADE BY THE PARTIES

897. For understandable reasons, the parties concentrated on two offers at trial – InterDigital’s 5G Extended Offer and Lenovo’s 2021 Offer. However, the 14 offers made by InterDigital and the 2 made by Lenovo form an important part of the negotiating history.
898. In his first report, Mr Meyer summarised these offers in a table, using information from the Agreed Joint Chronology of the negotiations,

Offering Party	Date	Economic Terms	Other Terms
IDC to Lenovo	December 2015	<ul style="list-style-type: none"> • 2G: 0.6%; \$0.60 Cap • 3G CDMA: 0.75%; \$0.30 Floor / \$0.75 Cap • 3G WCDMA: 1.2%; \$0.30 Floor / \$1.50 Cap • 4G: 1.5%; \$0.90 Floor / \$1.80 Cap • Lump sum payment of \$107M for past sales. 	<ul style="list-style-type: none"> • Worldwide, portfolio-based license running through 2018 • Past release • 40% discount on Lenovo’s worldwide sales (discounted rates shown)
Lenovo to IDC	May 2016	<ul style="list-style-type: none"> • \$23M lump sum 	<ul style="list-style-type: none"> • 10 year worldwide license • Standards covered not expressly stated, however license intended to cover all mobile devices of Lenovo and its affiliates under IDC’s portfolio IDC Portfolio

Offering Party	Date	Economic Terms	Other Terms
			<ul style="list-style-type: none"> • Full Past Release
IDC to Lenovo	August 2017	<ul style="list-style-type: none"> • \$91M lump sum 	<ul style="list-style-type: none"> • Standards covered not expressly stated • Term: 4 Years • Past sales deferred • Options for research collaboration and for up to 10% of consideration to be by way of patent transfer
IDC to Lenovo	November 2017	<ul style="list-style-type: none"> • \$71M lump sum • Share of Avanci IoT pool distributions – 50% of Lenovo’s distributions, up to \$35M (InterDigital guaranteed at least \$5M) 	<ul style="list-style-type: none"> • 2G, 3G, 4G and 5G standards covered • Term: 4 Years • Transfer of 10 patent families to Lenovo • Past sales released only with respect to Lenovo (not Motorola) and only if a renewal license was executed at conclusion of term • Cross-license from Lenovo to IDC contemplated • Joint R&D collaboration related to 5G
IDC to Lenovo	January 2018	<ul style="list-style-type: none"> • \$71M lump sum • Share of Avanci IoT pool distributions – 50% of Lenovo’s distributions, up to \$40M (InterDigital guaranteed at least \$5M). The cap would be increased by \$10M if IDC made a major acquisition and increased by \$5M if Lenovo chose to have server products licensed. 	<ul style="list-style-type: none"> • Standards covered not expressly stated • Term: 4 Years • Past sales released only with respect to Lenovo (not Motorola) and only if a renewal license was executed at conclusion of term

Offering Party	Date	Economic Terms	Other Terms
IDC to Lenovo	March 2018	<ul style="list-style-type: none"> • \$20M lump sum (5 payments of \$4M) • 3G: 1.5%; \$0.20 Floor / \$0.45 Cap • 4G: 2.00%; \$0.45 Floor / \$0.67 Cap • Share of Avanci IoT pool distributions – 50% of Lenovo’s distributions, up to \$40M (InterDigital guaranteed at least \$5M). 50% to 60% if Lenovo exercises option to cover mobile phones from a major IDC acquisition. Avanci distribution terms otherwise as per January 2018 offer. 	<ul style="list-style-type: none"> • Term: 5 Years • 3G, 4G standards covered • Running royalties to be paid once \$4M annual pre-payment in royalties is exceeded, at rates stated • 20% prepayment discount can be applied against royalty rates.
Lenovo to IDC	July 2018	<ul style="list-style-type: none"> • 0.07% of net sale price • Purchase of patents from InterDigital for \$10M (in addition to royalty payments). 	<ul style="list-style-type: none"> • Term: 4 Years • Standards covered not expressly stated, however license intended to cover all mobile devices of Lenovo and its affiliates under IDC’s portfolio
IDC to Lenovo	November 2018	<ul style="list-style-type: none"> • \$170M Up-Front or • Financing at 6% for \$17M initial and 9 annual payments of \$21.5M (\$210.5M total); or • \$23M per year for 10 years (\$230M total) • \$50M revenue sharing from Avanci or Via pool 	<ul style="list-style-type: none"> • Term: 10 years • Cellular (including 5G), 802.11, HEVC • Patent transfers to Lenovo in Q4 2020 and Q4 2022, each valued at \$10M
IDC to Lenovo	February 2019	IDC withdraws all prior offers	
IDC to Lenovo	February 2019	<ul style="list-style-type: none"> • 3G: 1.5%; \$0.20 floor / \$0.65 cap • 4G: 2.0%; \$0.45 floor / \$0.75 cap • 5G: 2.0%; \$0.55 floor / \$0.85 cap OR • Fixed-fee proposal for \$134M, up front (covered 3G, 4G, 5G, 802.11, and H.265) 	<ul style="list-style-type: none"> • Term: 5 Years (January 1, 2019-December 31, 2023) • 3G, 4G, 5G standards covered • IDC proposed binding arbitration for past sales. No release
IDC to Lenovo	August 2019 (UK Case)	<ul style="list-style-type: none"> • 3G: 0.75%; \$0.20 floor / \$0.60 cap 	<ul style="list-style-type: none"> • Term: 6 years (January 1, 2018-December 31, 2023)

Offering Party	Date	Economic Terms	Other Terms
		<ul style="list-style-type: none"> • 4G: 1.00%; \$0.45 floor / \$0.70 cap 	<ul style="list-style-type: none"> • 3G, 4G standards covered • Past sales release in return for royalty on past sales at rates stated for ongoing sales, due in lump sum payment made within 30 days of execution of the agreement.
IDC to Lenovo	January 2020	<ul style="list-style-type: none"> • 3G: 0.4% (NSP cap of \$100, NSP floor of \$40) • 4G: 0.5% (NSP cap of \$200, NSP floor of \$50) • 5 Year Term discount of 5% and additional regional discount of 5% applied, which yields the following discounted rates: 3G 0.36% (NSP cap of \$100, NSP floor of \$40), 4G 0.45% (NSP cap of \$200, NSP floor of \$50) • Additional volume discounts for every 20 million units per year. 10% discount per 20 million units, starting at 20 million units. Applied to the sales in each tranche (not based on total sales). Up to 70% discount for 140M+ units. • Fixed payment discount also available at 4% times the number of years being pre-paid (max discount of 20%). • Additional 10% per annum time value of money discount. 	<ul style="list-style-type: none"> • Term: 6 years (January 1, 2018-December 31, 2023) • 3G, 4G standards covered • Past sales release in return for royalty on past sales at rates stated for ongoing sales, due in lump sum payment made within 30 days of execution of the agreement.

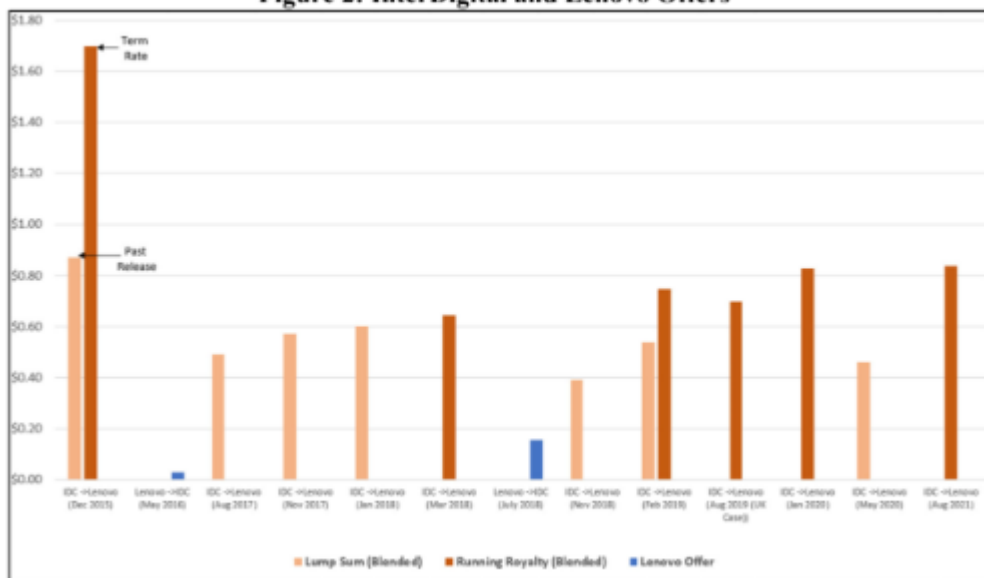
899. It is worth setting the context in which the later offers were made. The action started with InterDigital seeking a declaration that their August 2019 Offer was FRAND. Evidently some hard thinking ensued on InterDigital’s side as to what they wanted to contend/defend as FRAND. First, in the January 2020 Offer, it is clear that both the 3G and 4G rates were reduced considerably. The rates offered were as per the rates published on the InterDigital website. Although the availability of discounts is mentioned on the website, the scale of them was not (and still is not). It may be noted that the January 2020 Offer contained fairly detailed information on various discounts which had not previously been set out by InterDigital to Lenovo. It may also be noted that that sort of detail does not appear on InterDigital’s website.

900. Then, presumably as InterDigital was developing the evidence in support of its case for this trial, the 5G Extended Offer was made by InterDigital in August 2021. For convenience, I set out Mr Meyer’s summary of it, which, in substance, is no different to Mr Bezant’s summary I set out above:

- **Royalty:**
 - 5G: 0.54% (NSP cap of \$200, NSP floor of \$60, resulting in a per-unit royalty cap of \$1.08);
 - 4G: 0.45% (NSP cap of \$200, NSP floor of \$50, resulting in a per-unit royalty cap of \$0.90);
 - 3G: 0.36% (NSP cap of \$100, NSP floor of \$40, resulting in a per-unit royalty cap of \$0.36).
- Includes term discount of 5% and additional regional discount of 5% applied
- Term: 6 Years (Commencing January 1, 2018)
- Licensed Products: 3G 4G and 5G terminal units
- Territory: Worldwide
- Release: Past sales prior to effective date must be paid at the rates stated for ongoing sales, with lump sum payment made within 30 days of agreement
- Additional Available Discounts:
 - Volume: Discounts for every 20 million units per year. 10% discount per 20 million units, starting at 20 million units. Applied to the sales in each tranche (not based on total sales). Up to 70% discount for 140M+ units
 - Time Value of Money: 10% per year
 - Fixed payment: 4% discount times the number of years being pre-paid (max discount of 20%)

901. The major point is the inclusion of 5G. Although the rates for 3G and 4G might appear to have reduced, in fact they have been stated with the term discount of 5% and additional regional discount of 5% included, so in fact remain the same. The discounts remain the same.
902. In his first report, Mr Meyer presented his unpacking of all the offers made by the two sides in the chart set out below.

Figure 2: InterDigital and Lenovo Offers⁵¹



903. All the unpacked rates in this chart need to be treated with caution. For the reasons I summarised in paragraph 33 above (which I think affect all of these unpacked rates), all of them are overstated. By way of comparison, the Aug

2021 offer (i.e. the 5G Extended Offer) is shown as yielding an unpacked future rate of \$0.81, whereas the more appropriate corrected combined rate was \$0.51 (Meyer) or \$0.53 (Bezant). As a second comparison, I consider the presentation of the Lenovo offer in July 2018. The underlying calculation in PKM-3.3 shows it is a rate of \$0.16 but calculated only using 2018 data, using the offer of 0.07%. Mr Meyer accepted this reduced to a blended rate of \$0.11 per unit, whether using 2021 data or Q3 2013-Q4 2020 data. Mr Bezant's corrected figure was \$0.09. Provided the scale of those illustrative adjustments are kept in mind, the table continues to provide a rough comparative overview.

904. Lenovo were keen to stress in their submissions that InterDigital did not seek to justify its earlier offers as FRAND, concentrating only on the 5G Extended Offer, presented in Mr Meyer's table as the August 2021 offer. However, Mr Meyer's table indicates that several of the earlier offers unpack to a rate lower than that for the 5G Extended Offer, and would do so after appropriate adjustment. The lowest rate from an InterDigital offer is \$0.39 from the November 2018 offer (but the actual rate would be lower than that, for the reasons already given), the offer which InterDigital expressly disclaimed in this trial.
905. Reverting to the negotiations, a recurring theme from Lenovo's side was the lack of information available as to the sort of rates which other companies, similarly situated to Lenovo, were paying InterDigital.
906. I refer to the Lenovo offer made in July 2018, in which the rate offered was 0.07% of net selling price. The offer was contained in a letter dated 9th July 2018 from Ira Blumberg of Lenovo and it was presented at a meeting at Lenovo's offices in Chicago on that date. The main point of Mr Blumberg's very politely phrased letter was to convey what Lenovo had gleaned from their review of InterDigital's financial disclosures in their filings at the SEC. Lenovo had deduced, from those filings and from disclosures made by Apple, that Apple was paying an effective royalty rate of less than 0.07% for a patent licence similar to that offered to Lenovo, and that the data for Samsung had revealed similar results. Mr Blumberg acknowledged that the advantage to InterDigital of receiving fixed payments under those PLAs, rather than a running royalty, but he indicated that the offer compensated for this in two ways: first, because the 0.07% rate was greater than the effective rate which Apple and Samsung were paying and second, via an offer to purchase patents for a total payment of \$10m.
907. This offer gave rise to a long email from Mr Merritt in which he vented his frustration at the past year being wasted (In their submissions, InterDigital characterised 2017-2018 as the 'lost year'). A few months later, however, there was a further meeting on 20 September 2018, at which InterDigital effectively recognised that, if Lenovo were going to be persuaded to agree a rate and a PLA, InterDigital needed to provide more information about the rates being paid by Lenovo's competitors.
908. In a detailed PowerPoint presentation, after extolling the virtues of its various portfolios, InterDigital presented a series of slides headed 'Major Licensee Existing Fixed Fee Deals'. On the first, InterDigital acknowledged that Lenovo

had raised certain questions regarding the royalties other licensees are paying. The remainder of that slide comprised a series of caveats (including one concerned with the term ‘Accounting Rates’, which is significant in view of what has been revealed in this action) but concluded that, subject to those caveats, *‘and based solely on statements in InterDigital’s SEC filings and sales data from HIS’ 1Q2018 Handset Market Report, average per unit accounting rates for the identified Handset OEMs could hypothetically be calculated as set forth on the following slides.’*

909. On the following two slides, InterDigital set out for Apple, Samsung, Huawei and LG, the ‘Hypothetical WW per unit accounting rate’ for each (apparently based on 2017 figures, which do indeed give the quoted rate), along with a list of key factors. The rates quoted were as follows, along with the 2017 data:

- i) Apple: \$0.52/unit. \$111.7m / 215.8m 2017 units.
- ii) Samsung: \$0.22/unit. \$69.0m / 315.8m 2017 units (volumes included reflect unlicensed units).
- iii) Huawei: \$0.44/unit. \$68.0m / 153.1m 2017 units. The recognised revenue for 2017 was \$76.4m, including \$8.4m for past sales, leading to an inferred \$68.0m for 2017 sales.
- iv) LG: \$0.48/unit. \$30.0m / 62.7m 2017 units.

910. Later slides presented per unit royalty rates from three recent offers:

- i) First, the \$71m lump sum offers from late 2017/early 2018, which InterDigital presented as representing an accounting rate of approximately \$0.40.
- ii) Second, that InterDigital’s March 2018 RR offer would result in per unit royalties of \$0.36 per 3G unit and \$0.54 per 4G unit.
- iii) Third, that Lenovo’s counteroffer at 0.07% would give rise to a lump sum for 2017 of just over \$5m from 50.6m 2017 units and would translate to \$0.10/unit.

911. On 21st September 2018 (i.e. the day after that meeting) Mr Blumberg sent an email in which he described the meeting as productive and conducted in a cordial and constructive atmosphere, but sought to clarify a few points apparently arising from the meeting. This email is another highpoint of InterDigital’s case to the effect that Lenovo was an unwilling licensee and Mr Merritt’s evidence to the effect that Lenovo was ‘the worst licensee ever’ and showed ‘a complete lack of good faith’ in its negotiations.

912. Mr Blumberg’s first point concerned a proposal to achieve agreement on the appropriate sales volume numbers for Lenovo over the mooted 10-year licence period. For his second point, Mr Blumberg indicated that he would not get buy-in from his management without ‘*a concrete sense of the overall financial terms and each of the financial components that are part of the proposal.*’ He

specifically sought ‘strong evidence’ that InterDigital could collect royalties in excess of 0.019% for phones in China, and evidence that Lenovo would pay no higher a rate than Huawei. He sought similar assurances for his PC group as regards its competitors in the PC market. He continued:

“We need help with all the above data for two reasons. First, Lenovo’s management is keenly sensitive to competitive issues and always wants reassurance that the competition is (a) actually paying for the license that Lenovo would take; and (b) paying at least as much as Lenovo would be paying (either on a per unit or a percentage basis). Second, when proposing licensing deals, management always asks that question: “What is the alternative”? For this, we ask our litigation group to do an analysis of the risk adjusted cost of a legal dispute. This includes attorneys’ fees, risk adjusted damages, risk of injunction, time value of money etc. For this, we need to show that taking a license is less expensive than the risk adjusted cost of litigation. Particularly for this second point, any data you have regarding litigation outcomes worldwide will be useful.

Once we have all of the above information and materials, we can then make the case to management. Of course the other question I will get is, ‘Is this the best deal you can negotiate?’ This is the other reason that I prefer to negotiate to a best and final set of terms before presenting to management...

In the current case, all of the above is complicated further by the fact that I will need to present to and get approval from three different business units...”

913. The response to this email (from Tim Berghuis at InterDigital) was very cordial in its tone. Mr Berghuis said they were currently working on a response to Mr Blumberg’s requests and planned on having a complete response in the next few weeks. He then went on to set out, at a very high level, the data on Lenovo’s sales volumes, and asked for feedback. The full response came on 17 October 2018, in which Mr Berghuis explained InterDigital’s reasons why the 0.019% rate was not relevant. There was a follow up meeting in November 2018, at which InterDigital made the offer outlined above, again in a reasonably detailed PowerPoint presentation.
914. In his third witness statement, Mr Merritt commented on the negotiations in the 2017-2018 period. He described Lenovo’s July 2018 offer as ‘*low ball*’. He said that in that period, InterDigital ‘*did a significant amount of stretching to try to get a deal done.*’ He indicated they would not have made the sort of concessions they did in that period with ‘*a normal implementer*’. In that context, he stated ‘*In my experience of negotiating licenses, Lenovo was among the worst, if not the worst prospective licensee with which I had ever dealt.*’
915. When cross-examined on the 21st September 2018 email, Mr Merritt made a number of points about it:

- i) First, that the request to pay no more than Huawei was unreasonable. He characterised Lenovo as being disingenuous in ignoring volume discounts. He repeatedly stressed that Lenovo was part of a patent pool which applied volume discounts. The logic was to this effect: everyone uses volume discounts so they must be reasonable. This logic is entirely circular.
- ii) Second, that many of the requests for information were ‘*to stall*’. Mr Merritt was keen to stress that ‘*the information* [re InterDigital’s major licensees] *was all out there*’.
- iii) Third, after reading the ‘We need help’ paragraph, that it was unreasonable for Lenovo to ask ‘what are all your licensees paying’ because ‘he knows that all of those agreements are under confidentiality. He knows that. How is that a reasonable request?’
- iv) Fourth and generally, that this email and the requests in it were ‘*the continuation of the hold-out behaviour*’.

916. Mr Merritt’s evidence was in stark contrast to the emails which followed Mr Blumberg’s 21st September 2018 email. I realise that InterDigital wanted to retain a cordial atmosphere and would therefore have not vented their true feelings, but even allowing for that, I find Mr Merritt’s evidence to be the result of hindsight, heavily influenced by the case which InterDigital was seeking to make that Lenovo was an unwilling licensee (cf. paragraph 76 above).

917. I have not lost sight of InterDigital’s *Wisniewski* point. The argument was made most strongly as regards the absence of any evidence from Ira Blumberg, but in InterDigital’s Closing, it also embraced Fergal Clarke, Scott Reid, Laura Quatela and others involved in the negotiations on Lenovo’s side. However, the contemporaneous documents were the most reliable guide as to what happened in the negotiations, a consideration confirmed by the evidence I heard from Mr Virmani and Mr Merritt, for different reasons. In fact, I would go so far as to say that the time spent at the trial examining the documents from the negotiations with various witnesses was largely wasted and could have been much better spent on the bigger issues which this case raised.

918. If Mr Blumberg had given evidence, it is clear that InterDigital would have cross-examined him on some testimony he gave in a deposition in January 2019 in a US claim involving Qualcomm:

‘Q. And in your experience, do parties to licensing negotiations assess the anticipated outcome of any litigation when evaluating their position in the -- in the negotiation?’

A. I can't speak to everyone, but certainly that's the number one thing I use to assess whether I want to sign a license, is a careful analysis of whether litigation and the likely outcome of litigation, plus the expense, taking into account the time value of money and so on, is ultimately greater than or less than the negotiated alternative. And I'm very pragmatic; when the

negotiated alternative is clearly less expensive, I'm happy to take a license. When the negotiated alternative is equal to or greater than the likely litigation outcome, I'm not ready to sign, and I'm ready to keep negotiating and/or litigating as necessary. That's certainly been my -- my experience, not only for myself, but at least for the more successful licensing folks that I've dealt with over the years.'

919. The transcript was in the cross-examination bundle for Mr Djavaheerian. Although he was taken to it, he was not asked any questions about it. Having read this passage, Mr Djavaheerian observed that the explanation was similar to a letter sent in the negotiations. Mr Djavaheerian clearly had in mind Mr Blumberg's email quoted in paragraph 912 above. InterDigital clearly thought these explanations from Mr Blumberg were clear evidence of hold out. However, I have little doubt that Lenovo took and take the opposite, but equally pragmatic view. It is clear to me that, when one is considering the largest implementers, both InterDigital and the implementers see litigation as a normal part of the negotiating process. Of the Lenovo 7, only Apple 2016 and ZTE 2019 were not preceded by litigation, in both cases for reasons particular to their respective situations.
920. I have also not ignored InterDigital's argument that in 2018-2019 Lenovo should have agreed to InterDigital's proposals for arbitration. However, an arbitration to settle FRAND terms has to be by way of agreement and is but one method of dispute resolution. Suffice to say that whilst FRAND principles are still being worked out, I cannot say that Lenovo's refusal to agree to an arbitration was the act of an unwilling licensee.
921. The negotiations continued, off and on, until and indeed after the issue of the claim form in this action. I could continue my discussion of the detail of the licensing negotiations between the two parties which was the subject of other cross-examination. However, there is little or no point in doing so, because none of that detail alters the reasonably clear overall picture which emerges.
922. From InterDigital's side, it is clear they put forward numerous offers. In doing so, InterDigital were using the full suite of mechanisms and levers they had developed to persuade implementers to reach a deal. With the possible exception of InterDigital's November 2018 offer (which, as noted above, InterDigital expressly deny was representative of the FRAND range, and characterise as a 'last resort' offer made after 10 years of attritional negotiation), it is clear, in my judgment, that all the offers made and the positions adopted by InterDigital were too high and, in my judgment, outside the FRAND range.
923. From Lenovo's side, with the benefit of the information revealed in this trial, it is clear that Lenovo were justified in seeking further information and/or assurances about the rates which other, similarly situated, implementers were paying. In this regard, it is clear to me that InterDigital's reliance on the confidentiality of the PLAs with companies like Samsung, Apple, Huawei and LG was less than helpful, let alone transparent. Furthermore, InterDigital's reliance on the publicly available information from their SEC filings shows how

what I regard as the somewhat creative accounting behind those filings and the presentation of ‘representative figures’ can be used to mislead.

924. For example, take the four implied rates presented by InterDigital in their September 2018 presentation. A simple average of those rates is \$0.415. If negotiations had focussed on those rates, I have no doubt that InterDigital would have argued that the Samsung rate was depressed, and that the other three rates were more representative, almost certainly yielding a rate for Lenovo in the high 40s in terms of cents per unit. This would have been a rate which is more than double what I have found to be FRAND.
925. Whilst Mr Bezant derived the same rate for Apple 2016, and a slightly higher rate of \$[RED] for Huawei 2016, the rates presented for Samsung (\$[RED]) and LG (\$[RED]) were higher even than those LERs which Mr Meyer concluded, on Mr Bezant’s analysis, were derived for Samsung 2014 (\$[RED]) and LG (\$[RED]) (see Mr Meyer’s Revised Table 16 from Meyer III, set out above).
926. As I have pointed out above, one of the benefits of the points of principle which I found necessary to decide is that the need for this type of creative accounting ought to disappear, there being far less or no justification for heavy discounting of past sales, leading to disproportionate allocation of lump sums received to future sales, thereby creating inflated future rates which are then used to justify higher than FRAND demands. I have not lost sight of the accounting practice under which InterDigital operated, but one would hope that in future, public disclosures of lump sum deals could be much more straightforward, giving the industry the information they work on: total consideration paid with the number of units involved (often forecast).

DID INTERDIGITAL ACT AS A WILLING LICENSOR?

927. I can now return to address this question. Having considered Lenovo’s submissions on this topic carefully, two points occurred to me:
- i) First, that there is little or no downside for a licensor in pressing for supra-FRAND rates and thereby not acting as a willing licensor, apart from, of course, the irrecoverable costs of litigation, the loss of management time and the possible loss of recoverable costs and/or interest (which I acknowledge may amount to very substantial sums). The significant costs of this type of litigation put it out of reach of all but the larger implementers, even though it is to be hoped that it can be made less costly in the future as more FRAND issues are decided.
 - ii) Second, that Lenovo’s submissions on this issue were really presented to reinforce their position on the counterpoint issue: Did Lenovo act as a willing licensee? which I address next.
928. Overall, however, I am driven to the conclusion that by consistently seeking supra-FRAND rates, InterDigital did not act as a willing licensor.

DID LENOVO ACT AS A WILLING LICENSEE?

929. The answer to this question is not necessarily the corollary of the answer to the previous question.
930. InterDigital's key complaints regarding Lenovo's conduct can be summarised as follows:
- i) Excessive time taken to agree and renew NDAs.
 - ii) Causing significant delays in negotiations.
 - iii) Lack of authority to move the negotiations forward or do a deal.
 - iv) After an intense period of negotiation (i.e. 2017-2018), Lenovo rejected the deal and reverted with 'an extremely low counteroffer'.
 - v) Lenovo failed to engage with InterDigital's proposals for dispute resolution regarding FRAND terms.
931. There is some force in the first two points: Lenovo were slow to move things along. Against that, on occasion, InterDigital caused delays of equal magnitude. Mr Djavaherian observed in his cross-examination that 'the licence negotiation back-and-forth was not perfect on either side'. I agree. I place no weight on the other points. Overall, I conclude that Lenovo did drag their heels on occasion and to that extent, did not act as a willing licensee.
932. However, for most of the period of negotiations, my conclusions imply that Lenovo were correct not to agree to any of InterDigital's offers or positions and justified in seeking information. So, for the most part, Lenovo did conduct themselves as a willing licensee.
933. Once this litigation started, it is more difficult to characterise one side or the other as being unwilling, because each side must develop their case as they see fit. However, the circumstances in this action demonstrate that both sides can be unwilling at the same time.
934. Meade J.'s analysis in *Optis F* demonstrates that, when Lenovo failed to undertake to HHJ Hacon to take a licence the terms of which were to be determined at this trial, it did not act as a willing licensee. It may also be noted that the objections which Lenovo put up at the FOO hearing in Trial A have evaporated. At the same time, InterDigital were continuing to press for rates which I have found lie comfortably outside the FRAND range, so InterDigital continued to fail to act as a willing licensor.
935. The final point I address under this head arises from the pleadings, but it is not a point, as far as I am aware, which was mentioned at trial. In paragraph 35A of the Particulars of Claim, InterDigital pleaded that Lenovo had not behaved consistently with being a willing licensee. Amongst the points relied on was an allegation that they had not offered to pay anything to secure the royalties which would be payable to InterDigital were they a licensee.

936. Although Lenovo denied in their Defence that there was any obligation to pay monies in advance of the conclusion of a licence on FRAND terms, Lenovo also denied the specific allegation I have just referred to, on the basis that ‘*Security in respect of a substantial sum has been provided to the Claimants, on confidential terms.*’ Later in the Defence, this security is identified as having been provided by bank guarantee.
937. In their Reply, InterDigital admitted the provision of security but alleged it was insufficient in light of Lenovo’s sales of relevant products.
938. Since I have been provided with no evidence as regards the size of this security I am unable to resolve the issue whether it might be considered to be sufficient or not. Bearing in mind (a) the case which InterDigital was running, which was that Lenovo had disqualified itself from being a beneficiary of InterDigital’s undertaking to ETSI, and (b) the provision in the ETSI materials which I discussed in paragraph 203 above, I was more than a little surprised that nothing has been said about this security or its size.

CONSEQUENCES

939. I can now return to consider InterDigital’s two alternative cases on conduct – the ‘fact insensitive case’ and the ‘fact sensitive’ case.
940. On the ‘fact insensitive case’, I agree with InterDigital that Lenovo should have been subject to a FRAND injunction in respect of the Trial A patent (EP558), at the latest from the date of the much-delayed form of order hearing.
941. In his closing argument, Mr Speck KC urged me to grant a FRAND injunction against Lenovo immediately, and my initial promise was to consider the point in the week following the conclusion of the trial. With the benefit of the hindsight view that this judgment provides, it is a matter of some regret that I did not issue an Order granting a FRAND injunction. Whether the delay makes a difference will remain to be seen. However, upon the hand down of this Judgment I propose to put Lenovo to their election. Due to the length of this judgment, I will give the parties longer than usual to consider it, propose corrections and redactions and to take instructions, subject to the usual confidentiality provisions which apply to draft Judgments. I will also want to be informed of the size of the bank guarantee provided by Lenovo and when it was put in place.
942. I reject InterDigital’s ‘fact sensitive’ case for at least these principal reasons:
- i) First, because I have found that it was reasonable for Lenovo to reject all the offers made by InterDigital as not FRAND, especially due to the facts that (a) InterDigital failed to provide any information about comparable licences until around July 2018 and (b) the information which was then provided was not reliable since the rates were inflated. Although Lenovo’s July 2018 offer was low, Lenovo had clearly explained the basis on which it was made, and that led to the provision of information from InterDigital regarding Samsung, Apple, Huawei and LG which I have just mentioned.

- ii) Second, for the reasons explained above, Lenovo did not, by their conduct in negotiations, disqualify themselves from being a beneficiary of InterDigital's undertaking to ETSI.

943. On that latter point, Lenovo came close in the rather artificial way in which they persuaded HHJ Hacon not to grant a FRAND injunction after Trial A. However, as I have indicated above, even if it is assumed that Lenovo have not acted as a willing licensee, they retain the ability to have a change of heart down to the point where they are put to their election, provided that they accept the full consequences of adopting the status of a willing licensee.

OVERALL CONCLUSIONS

944. The result of my comparables analysis above is that the lump sum which Lenovo must pay to InterDigital for a FRAND licence down to 31.12.2023 is \$138.7m.

945. I find no value in InterDigital's Top-Down cross-check in any of its guises.

946. Based on the outcome from my comparables analysis, I find that neither InterDigital's 5G Extended Offer nor Lenovo's Lump Sum Offer were FRAND or within the FRAND range.

947. In large part, I reject InterDigital's case on conduct. Ultimately, however, Lenovo will be put to their election, at which point they will demonstrate whether they are a willing licensee or not.

CASE MANAGEMENT OF FRAND TRIALS

948. There are a number of points I wish to make by way of a postscript, under this heading, based on my experience of case managing other FRAND cases (which did not reach trial) but in particular in the light of my experiences in this case.

949. First, the parties should make every effort to ensure that forensic experts use the same data source(s). I realise that Lenovo were unusual in not having their own sales data (at least for some years in issue). However, the use of different data sources by the experts in this case gave rise to considerable and unnecessary complication. Data sources should be identified at an early stage and the parties should endeavour to agree them. If they cannot be agreed, then the Court will rule.

950. Second and more generally, I consider that these cases require much closer case management than occurred for this FRAND trial, particularly in relation to any supporting arguments, such as the top-down cross-check deployed in this case. The hedonic price regression should have been recognised for what it was, an experiment, and case managed as such. The value of that exercise would have been adjudged by reference to the precise facts which were sought to be established (which is the starting point against which any permission to carry out experiments must be decided).

951. Third, the PTR in advance of a FRAND trial should not be treated as simply an opportunity to get the Court to resolve outstanding procedural issues. Instead,

and particularly if the issues are of any complexity, the PTR should be taken as an opportunity to identify to the Trial Judge the issues which he or she will be required to decide. The List of Issues with which I was supplied at the start of the trial was at a very high level indeed and quickly became of no practical utility.

952. Fourth, the parties must continue to keep the trial estimate under review and ensure it is realistic. The estimate of 15 days was plainly inadequate for this trial, in view of the volume of material and the complexity of the issues. I have already indicated that even the 4 days' pre-reading was woefully inadequate. Of course, it is possible for the parties to trim their cross-examination and submissions to fit into an estimate but leaving the Court with a mass of complex material simply means that considerably more time is required to prepare the Judgment, and this can disadvantage other litigants and clearly has done so in this instance. On this point, I must apologise for the time it has taken me to deliver this Judgment, but a series of other trials had to be heard.
953. In my view, additional care needs to be taken with pre-reading and trial estimates when there are distinct counsel teams dealing with different parts of the case, as occurred here. By playing tag team through the hearing, the respective teams have the opportunity to decompress and assess their part of the case, whilst the other team is in Court. There is no equivalent respite for the Court. Furthermore, a general awareness of the 'other' part of the case is no substitute for a proper appreciation of the whole with which the Court has to grapple.
954. Fifth, I realise that these FRAND determinations may involve large sums of money, but as the jurisprudence develops, litigants must endeavour to focus only on the issues which really matter.
955. Sixth, I have discussed above the problems caused by Lenovo not having access to adequate information from InterDigital on comparable licences until a confidentiality regime was established in the course of this litigation. The ETSI IPR Policy offers no solution to this problem, which must occur frequently. One possible solution is for the parties to start an action, agree to early disclosure of potentially comparable licences under a Court-monitored confidentiality regime and to agree a stay of the action to allow the parties to negotiate on the basis of the information then available. If those negotiations do not succeed after a limited time, then the action may continue.
956. The final point is not peculiar to FRAND trials. It concerns the evidence of Dr Wang. It ought to have been clear to Lenovo's legal team that she had points to make in response to Dr Putnam's second report and that those points should have been identified in a second report from her. It was unacceptable for her new points to emerge only in cross-examination (none of them having been put to Dr Putnam in cross-examination) and particularly so in view of the technical nature of her evidence. This should not have been allowed to happen.

POSTSCRIPT

957. Shortly after the draft Judgment (very substantially in the terms set out above) was provided to the parties for their proposals as to corrections and confidentiality redactions, the Form of Order hearing occurred on 6th March 2023 following my judgment in Trial C. For that hearing, Lenovo indicated it was prepared to give an undertaking to take a licence pursuant to the election I mentioned in paragraph 947 above. Lenovo's undertaking to that effect was embodied in the Order I made on 6th March 2023 and was in the following form:

“That within seven days of the expiry of the time to appeal against the final order of the High Court settling the terms of a FRAND licence (“Final FRAND Trial Order”) or, if there is an appeal (or appeals) against the Final FRAND Trial Order, the withdrawal or final determination of such appeal(s), the Defendants will enter into the form of licence settled by Mr Justice Mellor or such other licence as may be finally settled by the courts in these proceedings (“Settled Licence”).”

958. All other issues arising out of this Judgment, including the form of the Settled Licence will have to be addressed at the further hearing which I mentioned in paragraph 2 above which will take place shortly and before this term ends on 5th April 2023 (pursuant to paragraph 19.1 of the Patents Court Guide). I direct that time for seeking permission to appeal shall not run until after that hearing.

ANNEX

Guide to terms/abbreviations used in the comparables analysis and where first used/defined:

Term	Meaning	Paragraph
5G Extended Offer	see	20
ASP	Average Selling Price	33
AV	Ad valorem	37
CBR	Common Basis Rate	300
IDC	International Data Corporation	Fn 1
InterDigital 20	see	43
ITC	International Trade Commission	124
Lenovo 6	see	43
Lenovo 7	see	43
Lenovo's Lump Sum Offer	see	26
LER	Licensee Effective Rate	31, 300
LS	Lump Sum	32, 118
Optis F	see	165
Optis F CA	see	165
PDR	Pre Discounts Rate	300
PLA	Patent Licence Agreement	43
PV	Present Value	32
RR	Running Royalty	118
SA	Strategy Analytics	36
TCL v Ericsson	see	166
UPHC	see	42, 165
UPCA	see	165
UPSC	see	165