

European Commission is recklessly replacing established and effective FRAND valuation and licensing practices with dubious top-down rate setting

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I have already made various public comments on a draft *Proposal for Regulation of the European Parliament and of the Council establishing a framework for transparent licensing of standard essential patents*, including the associated draft *Impact Assessment report* that were leaked ahead of their public launch on 27 April 2023. These comments were first [published in IAM \(paywalled\)](#) and then [republished in IP Finance](#). Among numerous legal and other issues in these proposals, I am focusing here on the anticipated methodologies for setting aggregate and individual SEP royalty charges by the new competence centre at an expanded EUIPO.

The proposed regulation largely ignores and seemingly abandons *comparable license* valuation of patent portfolios—that predominates in licensing negotiations and court decisions—and implicitly replaces this with the dubious *top-down approach*¹ that is antithetical to patent law and is repeatedly rejected by the courts worldwide. Comparable licenses provide fair, reasonable, non-discriminatory and effective royalty charge benchmarks in bilateral and multilateral SEP valuation and license charging. The standing of these—typically global—benchmarks is underpinned by billions of dollars of licensing income over decades in numerous licenses including many licensors and licensees.

If a prospective licensor can demonstrate that it has infringed and valid patents it is entitled to a license. If these are standard-essential patents it is obliged to offer and is entitled to receive FRAND royalties. Where charges and other terms have been established in existing licenses, some of these can often be comparable benchmarks for licensing other implementers.

The proposed legislation makes only one passing mention of comparable licenses when describing difficulties including transparency and complexity in making FRAND determinations. The impact assessment only includes references to comparable licenses to acknowledge that they are used and

¹ The Commission is explicit in its intention to determine aggregate royalties for some technology standards. As the impact assessment indicates from the results of its literature analysis: “An aggregate royalty for a standard is the royalty due for all SEPs on the standard. It is the starting point in a top-down determination of the royalty to be paid for a given portfolio.” The Commission’s desire that the essentiality of all patents in standard, or a representative random sample of them, are checked, rather than only small numbers of them per patent owner, stealthily implies that it wants patent counts to be used as measures of patent strength— as required in the top-down approach—even though this widely contested apportionment method is not explicitly identified or advocated in the proposed legislation. The proposed legislation requires that “The checks will be conducted based on methodology that ensures a fair and statistically valid selection capable of producing sufficiently accurate results about the percentage of truly essential patents among each SEP holder’s registered SEPs.” The impact assessment also hopes that “if the register will be perceived by SEP holders as a means of indicating portfolio strength (and e.g. used in negotiations to determine the share of aggregate royalty applicable to them), they may increase the number of registered patents.”

to indicate that some are dissatisfied with the extent of disclosure of existing licensing terms and licenses. Neither document finds that the established royalty charges in existing licenses are excessive or inapplicable FRAND licensing benchmarks.

Elsewhere in licensing negotiations and in litigation, comparable licenses are generally considered to provide the very best benchmarks in determining royalty charges.

Regulated royalties are unwarranted

Setting aggregate rates and apportioning them among patent owners, centrally by the EUIPO—even on a non-binding basis—will unnecessarily distort the free market processes in standards development and FRAND patent licensing compensation that has been effective in enabling the world’s fastest growing and largest ever technology ecosystem serving more than [five billion people](#) and [16 billion connections](#) with cellular worldwide.² Parties in licensing disputes will feel obliged in the proposed mandatory conciliation process to give significant weight to the EUIPO’s determinations, as will the courts. However; there is no basis whatsoever, let alone supporting evidence, to infer there is market failure or harm to be fixed, or that established benchmarks for royalty charges need to be replaced.

Despite the existence of well-established licensing benchmarks, there is significant dispute about how else to value SEP portfolios and determine royalty charges for these. According to the impact assessment, “Although an impressive amount of scholarship has analysed or interpreted the FRAND concept, this scholarship is characterized by persistent differences of opinion on key aspects of the FRAND concept such as royalty evaluation methods and obligations to license certain parts of the relevant industry.”

The top-down approach in deriving royalty charges for standard-essential patents requires the setting of aggregate royalties for specific standards and applications. These rates are then notionally apportioned among patent owners—typically including those that do not license and will never collect any royalties—based on a patent strength metric. The top-down approach has several major shortcomings, as indicated below, and as I have explained previously elsewhere.³

Which aggregate and what does it represent?

There is no consensus even on whether there should be some kind of aggregate royalty limits, let alone what figures these should be or which methods ought to be used to derive them. For example, some patent owners publicly disagreed with setting aggregate royalty goals, let alone the levels for these, announced by some other patent owners and technology implementers for 3G and 4G in mobile phones in the 2000s.⁴ Even defining aggregate is debateable: is this total a theoretical

² See also, Keith Mallinson, *Don’t Fix What Isn’t Broken: The Extraordinary Record of Innovation and Success in the Cellular Industry Under Existing Licensing Practices*, George Mason University School of Law Center for the Protection of Intellectual Property, 1st July 2016, <http://www.wiseharbor.com/wp-content/uploads/2016/12/Mallinson-FINAL.pdf>

³ Keith Mallinson, *Unreasonably-low royalties in top-down FRAND-rate determinations for TCL v. Ericsson*, IP Finance, 30th April 2018, <http://www.ip.finance/2018/04/unreasonably-low-royalties-in-top-down.html>

⁴ For example, in 2008, Qualcomm stated “Contrary to recent claims by a small number of manufacturers, FRAND does not, and never has, prescribed formulas for imposing cumulative royalty caps or proportional allocations of such royalty caps. Such formulas would arbitrarily limit the value of standards essential patents, discourage innovation, encourage the filing of marginal patents, complicate and delay the standardization process, and be impossible to implement in practice.” www.qualcomm.com/content/dam/qcomm-martech/dm-assets/documents/lte-wimax-patent-licensing-statement_1.pdf

maximum that nobody would ever pay, a typical or average figure that would be or is actually paid after caps, discounts and many patents remaining unlicensed, or something in between? In my seminal research on aggregate royalty charges in 2015, I rebutted a common but speculative narrative based on misapplication of mid-19th Century economic theory regarding commodity complements—asserting that royalty charges could “stack” to as much as 30% of smartphone selling price—with my empirical proof that rates paid averaged no more than around 5%.⁵ The difference is due to many factors including unlicensed patents, royalty-rate caps, volume discounts, geographic discounts (e.g. for China), cross-licensing and pass-through rights bundled with chipset sales, as well as wishful thinking with the inflated expectations and demands of some patent owners.

Royalty charges—in lump sums, monetary figures per unit or ad valorem percentage rates, as parties agree—like most other prices, are usually established through consideration of market factors including value to customers, costs and competition among various players. It is fanciful to believe that hiring some really expert people to *make up* aggregate royalty values will enable better, fairer or truer figures to be derived. Instead, processes will be susceptible to political capture and figures will be significantly affected by interest group lobbying as the proposed new competence centre is set up, governed and operated. Nevertheless, the aggregate rates set and their apportionments will seemingly be justified by the impressive academic and other credentials of those who are chosen to make such determinations.

How should one apportion the aggregate?

Top-down apportionment is usually by some kind of patent count. Even top-down approach advocates have differing opinions about which patent strength metric to use.

Apportionment is based on the faulty premise that the relative value of different patent portfolios is directly proportional to the number of patents in each of these. On the contrary, there is abundant evidence that the value of patents, including SEPs, varies enormously. Some patented technologies are crucial in creation or improvement of standards, others, such as those reading on parts of the standard that are optional and are rarely or never implemented, are worth very little. The top-down approach ignores whether products actually infringe. Some SEPs read on optional parts of the standards that are not implemented in all products. Some SEPs relate to devices, and others relate to network equipment. The top-down approach ignores validity. Top-down only seeks to determine fair and reasonable royalties overall and on average for all licensees. It makes no attempt to determine non-discriminatory variations in rates among differently situated licensees.⁶ For example, SMEs are markedly different companies from the large licensees such as Apple and Samsung that dominate product supply in the smartphone market.

⁵ Keith Mallinson, *Cumulative mobile-SEP royalty payments no more than around 5% of mobile handset revenues*, IP Finance, 24th August 2015: <http://www.ip.finance/2015/08/cumulative-mobile-sep-royalty-payments.html>. My methodology was replicated, validated and refined by academics in their published research. See also: Alexander Galetovic, Stephen Haber, and Lew Zaretski, *An Estimate of the Average Cumulative Royalty Yield in the World Mobile Phone Industry: Theory, Measurement and Results*, Telecommunications Policy 42, no. 3 (2018): 263, 271; J. Gregory Sidak, *What Aggregate Royalty Do Manufacturers of Mobile Phones Pay to License Standard-Essential Patents*, Criterion Journal on Innovation 1 (2016): 701.

⁶ This was evidently one of several reasons why Justice Mellor rejected the top-down approach in *Interdigital v. Lenovo* in which royalty charge discrimination was the most contentious issue. He recognized that while Judge Selna had used the top-down approach in *TCL v. Ericsson*, Judge Selna was also mindful of this shortcoming and the superiority of comparable license benchmarks: “A top-down approach cannot address discrimination and is not necessarily a substitute for a market-based approach that considers comparable licences.”

Counting declared-essential patents

Some companies favour the counting of raw declared-essential patents that remain unchecked for essentiality by any third party because this bloats the denominator in essentiality rate calculations and inflates the positions of patent owners that are most liberal and voluminous in their declarations.⁷ However, this is widely regarded as inaccurate and unreliable because there is no constraint on patent owners distorting this measure of their patent portfolios' strengths by making excessive declarations. There is a conflict between the patent policies of SSOs that encourage liberal declaration of any patents owners believe might be or might become essential to ensure standards are not blocked, and the separate use of patent counts by other organisations as metrics of patent strength. The term *over-declaration* has been coined due to the distortions this causes in the latter. Over-declaration comes in two forms: declaring excessive numbers of patents, and declaring individual patents excessively to multiple technical specifications within standards.⁸

Random sampling and essentiality checking

Many patent owners, implementers and others prefer that patents are also checked for essentiality by someone other than the patent owner. With tens of thousands of declared patents that is very costly, and yet checking is inaccurate and subject to significant biases, with false positive essentiality determinations tending to exceed false negatives.⁹ While sampling can significantly reduce the overall size of the task, random sampling errors, and non-random errors as well as random errors in essentiality determinations, must be considered in designing and evaluating patent counting studies.

Checking only samples of patents can significantly reduce costs, even if sampled patents are more thoroughly checked and with the additional cost of claim charts. Nevertheless, samples sizes in the thousands are likely to be required for adequate precision—particularly if true essentiality rates are low (e.g. at only around 10% in some cases, according to certain experts).¹⁰ This is because random sampling errors increase as a proportion of decreased essentiality rates.

Unfortunately, any use of sampling is problematic with determination errors. For example, if only one in ten patents is sampled, any determination errors and corrections after “re-checks” or appeals will have a 10-fold impact on total patent counts inferred by extrapolation. I agree with the impact assessment that allowing appeals on essentiality determinations of randomly sampled patents could exacerbate rather than correct bias. Appeals against determinations will inevitably not be random.

However; I also believe that parties must generally be able to challenge individual determinations or patent counts somehow. A right to appeal in case of error and inaccuracy is a basic right which must be preserved.

The impact assessment is confusing and misleading in its statement that “false positive and false negative random errors tend to cancel each other out.” The terms “false negative” and “false positive” in the context of essentiality checking and patent counting are usually understood to apply

⁷ For example, Apple, *A Statement of FRAND Licensing of SEPs*. “A SEP licensor’s pro rata share of declared SEPs is an objective reference point in a FRAND negotiation”: <https://www.apple.com/legal/intellectual-property/frand/>

⁸ Keith Mallinson, *Gaming the System: A Scatter-Gun Approach to 5G Declarations*, IP Finance, 5th December 2022, <http://www.ip.finance/2022/12/qaming-system-scatter-qun-approach-to.html>

⁹ Keith Mallinson, *Essentiality Checks Might Foster SEP Licensing, but Do Not Stop Over-Declarations from Inflating Patent Counts and Making Them Unreliable Measures*, 16th November 2022.

¹⁰ Keith Mallinson, *Essentiality Rate Inflation and Random Variability in SEP Counts with Sampling and Essentiality Checking for Top-Down FRAND Royalty Rate Setting*, 30th September 2021.

to individual essentiality determination errors rather than random errors in the totals of essential and not essential patents in entire sample. It is true that random sampling errors do tend to cancel each other out (i.e. they may be substantial in any given sample, but at least they are unbiased from one sample to another). In contrast, positive and false negative determination errors are perniciously not entirely random, do not tend to cancel out and can result in significant bias.¹¹

Consequently, checking can provide a false sense of security and precision. Over-declaration, by some patent owners, is only mitigated, not eliminated, by checking. The more a patent owner over-declares, the more inflated its patent counts and essentiality rates will be.

Some interested parties prefer not to count patents at all and instead count the numbers of technical contributions that are approved by standard setting organisations (SSOs) to be included in the standards. Among the advantages of this approach is its low cost in comparison checking numerous patents for essentiality. Approved contributions is one of the metrics that is used by Avanci in its 4G automotive licensing programs and that is thus accepted as a valuation method by its 56 licensors and many manufacturers accounting for more than 80% of connected vehicle sales.

Established licenses provide the best royalty benchmarks

As already explained, the difference between purported maximum rates and those actually paid is due to many factors including royalty-rate caps, volume discounts, geographic discounts (e.g. for China), cross-licensing, unlicensed patents and pass-through rights included with chipset purchases, as well as over-confidence of patent value by some patent owners.

All these issues, along with value in use, are commonly considered in the negotiation and litigation of the licenses that might become suitable benchmarks in comparable licensing assessments. Good benchmarks are those licenses that are underpinned by substantial volumes of licensing over typical multi-year contract terms. Non-discriminatory rates can be identified by carefully selecting which among all licenses are deemed to be comparable licenses.

The top-down approach has been discredited, and in several cases rejected by the courts that also prefer to use comparable license benchmarks.

The *Unwired Planet* Decision only used top-down approach methodology as a cross check. Crucially, this avoided actually having to set *the* aggregate rates for apportionment. Instead, aggregate rates were implied from the royalty rates in the licenses chosen as comparable, together with the patent owner's share of SEPs. According to Justice Briss, "the main conceptual difficulty I have with [] using a total stack in a top down approach as opposed to using it as a cross-check is in the selection of the total royalty burden T to start with." He was particularly suspicious of public statements about what the aggregate rate should be. "The claims are obviously self-serving. The statements about aggregate royalties in particular are statements about other people's money on the footing that the person making the statement says at the same time that the cake is quite small but they are entitled to a large piece of it."

The entirety of the *TCL v. Ericsson* FRAND Decision including [its shaky top-down valuation](#) was unanimously vacated on appeal.

¹¹ Keith Mallinson, *Essentiality Checks Might Foster SEP Licensing, but Do Not Stop Over-Declarations from Inflating Patent Counts and Making Them Unreliable Measures*, 16th November 2022.

The recent [InterDigital v. Lenovo Judgment](#) in the UK “f[ound] no value in InterDigital’s Top-Down cross-check in any of its guises,” despite huge amounts of expert work. Royalty determinations were entirely based on comparable licenses.

[Early reporting on the UK’s Apple v. Optis FRAND Judgment](#) also indicates reliance on comparables.

If the problem in determining royalties from established licenses is inadequate disclosure of licensing terms and agreements, the solution should be to improve licensing disclosures rather than to ignore this preeminent valuation method. Parties in licensing can negotiate and in litigation the courts decide which licenses are comparable, and which are not, as they consider issues such as discounts, interpret and compare royalty figures on a common basis.¹² It is significant that in addition to setting royalty charges between the two parties in the *Interdigital v. Lenovo* Judgment, Justice Mellor also chose to reveal lots of information and his analysis of it publicly to everyone else with interests in licensing through the Judgment’s 225 pages including many unredacted facts and figures. He also stated “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).”

Last-minute changes to proposals might exclude more than 90% of SEP licensing

With the public launch of the Commission proposals on 27th April 2023, in some last-minute changes it now appears in the final proposed legislation there should be some exemptions from intervention with royalty rate setting for “use cases of certain standards or parts thereof for which there is sufficient evidence that SEP licensing negotiations on FRAND terms do not give rise to significant difficulties or inefficiencies.” I could not find mention of use case exemptions in the leaked draft legislation I received in early April or even use of the term “use case” the final impact assessment. And, while the exemptions have not been identified, it seems these might be where licensing charges are already well established and transparent, such as with cellular standards in mobile phones and cars, and with video/audio codecs in consumer electronics. Approximate aggregate royalties paid on mobile phones have been evident for many years.¹³ Patent pools operated by [VIA Licensing Alliance](#) and [Avanci](#)—licensing the vast majority of SEPs and applicable product sales for several major standards—are very transparent and consistent with their licensing charges.

I estimate that the above categories include rather more than 90% of royalty payments in SEP licensing. Device volumes and licensing charges tend to be significantly higher on smartphones than other applications. Using the Commission’s licensing market figure total of Euro 18 billion annually,¹⁴

¹² Licenses need to be “unpacked” to enable like-for-like comparisons among them, given that charges can be fixed fee lump sums or running royalties at ad valorem percentage rates or monetary figures per unit. Interdigital and Lenovo each presented entirely different sets of licenses in their respective testimony. It also seems that Apple and Optis differed about which licenses were comparable.

¹³ See footnote 5 and also: Keith Mallinson, *The smartphone royalty stack: a long-term look*, IAM, 2nd March 2022, https://www.wiseharbor.com/wp-content/uploads/2022/04/Special-Report-2022-Q1_Patent-Dealmaking-IAM-Smartphone-royalty-stack.pdf

¹⁴ In my seminal 2015 work on aggregate royalties I derived a conservatively high figure for royalties paid to show that these were unquestionably far lower than figures such as 30% of a smartphone selling price that were being widely speculated by Intel, the NGMN Alliance and others over several years. In my aforementioned report that year entitled *Cumulative mobile-SEP royalty payments no more than around 5% of mobile handset revenues*, I stated “it is implausible that total royalties actually paid, including lump sums and running royalties, for standard-essential 2G, 3G, and 4G technologies, amount to more than approximately \$20 billion per year” based on 2013 and 2014 figures. \$20 billion corresponded to Euro 15 billion at the average exchange rate of \$1.33 per Euro in each of those years. I thought it likely the actual aggregate rate was much lower. For example,

that would be no more than Euro 1.8 billion worldwide and around Euro 450 million in the EU (assuming the EU accounts for around 25%) for the use cases of standards for which the Commission would still insist on regulating SEP royalties. The impact assessment's projected costs of proposals to build and operate a rate-setting bureaucracy at the EUIPO, including essentiality checking for tens of thousands of patents at around Euro 5,000 per patent, would be a substantial proportion of the SEP licensing income derived from European sales in use cases of standards that are not exempt.

Checking others' declared patents would also tie up an awful lot of skilled European engineers and patent attorneys who might otherwise be more fruitfully employed innovating and prosecuting their own SEPs.

Business as usual in IoT product sales and SEP licensing

Contrary to common misperceptions, cellular Internet of Things (IoT) applications and SEP licensing are actually already well-established in many cases. According to the GSMA, by 2022 there were more than 2 billion IoT connections out of total of 10 billion cellular connections globally. [Approaching half a billion cellular IoT modules are shipped every year](#), for various different applications and standards or parts thereof. Vendors Quectel, Fibocom, MeiG, Sunsea, Telit, Neoway, Sierra Wireless and U-blox—[which together account for the vast majority cellular IoT module shipments](#)—are, for example, [all among the several hundred licensees to Qualcomm's SEPs](#). Furthermore, as the leading supplier of cellular IoT chipsets over many years with 40% market share most recently, Qualcomm has also included pass-through rights to some other owners' cellular SEPs—in a so-called “grant-back” network—together with its chipset sales.

This is reassuring to cellular IoT module customers that typically seek patent-licensing indemnities on their module purchases. With the licensing of IoT modules, patents are exhausted and there is no requirement for licensing the same patents in the devices and applications in which the modules are embedded.

While it is unclear how many owners' SEPs are licensed overall in IoT modules, major licensors including [Ericsson](#) with more than 100 licensees and [Nokia](#) with more than 200 licensees also promote their IoT licensing programs on their websites. Some bilateral licensing is indirectly through intermediaries. For example, Nordic Semiconductor licenses SEPs on behalf of Nokia along with sales of [Nordic's cellular IoT chips](#).

Payments to SEP licensing market leader Qualcomm—generating approximately half of total SEP royalties— and to other established licensors set dependable royalty cost benchmarks, including for various IoT use cases provided by SMEs and larger companies.

I included “<\$4 billion” (that literally means the dollar figure might be as low as zero or any figure up to 4 billion) in licensing for cellular technology patent pools by applying their program rates to total handset sales figures, despite me believing these pools would perform very poorly. Cellular patent pools have failed to generate more than a very small proportion of that figure ever since then. I also included a <\$6 billion allocation for “other” licensors. My aggregate figure was selected by the Commission—presumably because it is the highest credible figure—but was misinterpreted as meaning “a little less than 18 billion of EUR dollars per year” in a 2016 report for the Commission by CRA entitled *Transparency, Predictability, and Efficiency of SSO-based Standardization and SEP Licensing* that has been widely cited by the Commission ever since, including eight times in the impact assessment. While the aggregate amount paid is difficult to measure or track, in light of the subsequent assessments made by Alexander Galetovic, Stephen Haber, and Lew Zaretski in *An Estimate of the Average Cumulative Royalty Yield in the World Mobile Phone Industry: Theory, Measurement and Results*, Telecommunications Policy 42, no. 3 (2018) (see footnote 5) and given marketplace developments since 2015 I believe the current figure is now no more than \$15 bn.

Avanci is a remarkable success in licensing cellular SEPs in connected vehicles. Since its formation in 2016, it has succeeded in signing up virtually all licensors of any significance for its 2G/3G/4G automotive programs. Nearly all manufacturers outside of China, accounting for 80% of global connected vehicle sales, are licensees. [Royalty charges are clear, public](#) and are consistently applied.

Don't throw out the baby with the bathwater

European SEP licensors are highly dependent on billions of dollars in SEP licensing income—mostly from Apple and Asian device manufacturers—to support their R&D amounting to around \$1 billion annually apiece for Ericsson and Nokia in recent years.¹⁵ It is vital that these exports and internal investments are maintained.

Limited checking to ensure that licensors have at least some SEPs shows that they can legitimately demand licensing and royalties. Many patent owners are already able to do this with their proud lists of patents that have been scrutinised by experts and in some case verified by the courts. The proposed processes at the EUIPO, including submission and checking of patents and some claim charts, as well as conciliators setting royalty rates, is fraught with all kinds of issues that will lend to manipulation, favouritism, bias and also subject checks or patents to subsequent legal challenges. SEP owners have shunned an essentiality checking system like this in Japan. There is no evidence to show that these European proposals will be any more welcome or widely adopted.

Parties in negotiation may agree to use whatever methods they wish to value patents and determine royalties, and courts also decide what to use case-by-case in litigation where they have often rejected top-down rate setting. Rote, formulaic methods for setting and allocating royalties by a central government bureaucracy are unnecessary and will harm a vibrant and well-functioning ecosystem in standards-based technology innovation and development. Better to obtain and reveal more information about existing licensing charges and other terms in many existing licenses than to make up alternatives.

¹⁵ Keith Mallinson, *How Europe can build on strengths in SEPs to reclaim leadership in cellular with 5G and 6G*, A paper for 4iP Council by WiseHarbor, April 2022: <https://www.4ipcouncil.com/features/how-europe-can-build-strengths-seps-reclaim-leadership-cellular-5g-and-6g>