

The Smallest Salable Patent-Practicing Unit:  
Observations on Its Origins, Development, and Future

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**I. INTRODUCTION**

The assessment of damages for patent infringement has become a thorny and contentious undertaking. One controversial thread in this evolving body of law is the notion of the smallest salable patent-practicing unit (“SSPPU”). It has become fashionable to refer to SSPPU as a substantive rule defining the appropriate royalty base for all purposes and in all contexts. Some have gone so far as to suggest that SSPPU constitutes a limitation on how patent holders may value their patents and a constraint on how private parties may conduct commercial negotiations.<sup>1</sup> It is even argued that in an infringement case against a multi-component product, the SSPPU concept implies that the royalty base must be derived not from the *value* the invention contributes to the end product, but from the *cost* to the infringer of one or more components it purchased from its suppliers.

All these suggestions are incorrect. Judge Randall Rader, while sitting as a district court judge, coined the term “smallest saleable patent-practicing unit” in the context of an evidentiary ruling on the admissibility of certain damages testimony in a jury trial. The determination of admissibility lies in the discretion of the trial judge, and in the damages context, identifying an SSPPU can be one useful guidepost. But the SSPPU concept was never intended to be, and isn’t, a rigid rule prescribing how patent damages and royalties must be calculated in all contexts. Notably in the recent case of *Commonwealth Scientific & Industrial Research*

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<sup>1</sup> For example, the IEEE recently revised its IPR policy to include consideration of SSPPUs in setting RAND royalties for patents declared essential to IEEE standards, such as the 802.11 WiFi standards. In China, the Electronic Intellectual Property Center (“EIPC”), a research center under the auspices of MIIT, released a draft IPR Policy “Template” for Chinese SSOs, which would require FRAND royalties to be based on SSPPUs; EPIC ultimately decided to drop this requirement.

*Organization v. Cisco Systems, Inc.*, 809 F.3d 1295 (Fed. Cir. 2015) (hereinafter “*CSIRO*”), the Federal Circuit rejected the argument that all damages models must be based on SSPPU and instead affirmed a district court’s use of a damages analysis that made no reference to SSPPU.

The notion of an SSPPU does not restrict how patent holders may value their patents, nor does it dictate how negotiating parties may arrive at mutually agreeable licensing terms. It certainly does not require that the prices of inputs to the manufacture of an infringing product determine the proper royalty base.

To take a simple example, suppose chemist C invents and patents a new and useful drug compound. C offers to license the patent to pharmaceutical company P. P will have to invest considerable resources to develop the drug, test it, manufacture it, and bring it to market. But when all is said and done, P anticipates making a handsome profit on selling the drug for years to come. Obviously, without the license, P will have no right to the drug and no profits from it. Basic principles of economics, as well as logic and commonsense, tell us that P will be willing to pay a substantial license fee, up to something less than its total profit, in exchange for the right to make and sell the drug. The amount P will ultimately pay to C as a licensing fee bears no relationship to the cost of the ingredients (likely a few pennies per pill) of the medication. There is simply no connection between an infringer’s *costs* and the *value* it obtains from using an invention.

Consider a second example. Suppose manufacturer M of multicomponent electronic devices makes a product using chips it acquires for \$10 each. The product incorporates a variety of patented technologies, implemented in large part in the \$10 chips. M sells its product to end-users for \$1000 each in 2015. In 2016, M’s chip supplier reduces its chip price from \$10 to \$5. M continues to sell its product for \$1000, now making even more

profit. No one would contend that in 2015 the patented technologies incorporated into M's product were worth a fraction of \$10, and in 2016 those same technologies were worth 50% less. The only change was that M's component cost went down, perhaps because its supplier's cost declined, or new models of chips were released, or chip competition increased. Nothing changed about the technology used in M's product. Indeed, the right to sell that product became *more* valuable, more profitable to M. Obviously, the infringer's cost of materials does not determine the value of the technology it uses.

This paper seeks to dispel confusion about the role of SSPPU in U.S. patent damages law, to prevent misapplication of the SSPPU concept, and to avoid policy missteps that may occur from misunderstanding these topics. We begin with background on U.S. law regarding the calculation of patent damages, and then examine the origin, development, and limitations of SSPPU in U.S. patent infringement case law. We conclude by debunking some popular myths, with a view to maintaining the SSPPU concept in its proper context going forward.

## **II. THE LAW OF PATENT DAMAGES, BRIEFLY**

The U.S. patent code provides that “the court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer”. 35 U.S.C. § 284. Damages may be fixed on the basis of lost profits, reasonable royalty, or a combination of the two. *Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1324 (Fed. Cir. 2009). The reasonable royalty thus acts as a damages floor. *See Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538, 1544 (Fed. Cir. 1995) (en banc) (“[T]he purpose of [the reasonable royalty] alternative is not to direct the form of compensation, but to set a floor below which damage awards may not fall.”). When assessing the reasonable royalty measure of damages, the Federal Circuit recognizes that market evidence, in the form of

actual licenses to the patent-in-suit, can be the best evidence. *See, e.g., Versata Software, Inc. v. SAP America, Inc.*, 717 F.3d 1255, 1267 (Fed. Cir. 2013). But such evidence is not always available, and courts have developed other methods for determining a reasonable royalty, including the often-employed hypothetical negotiation framework of *Georgia-Pacific Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116 (S.D.N.Y. 1970).

The U.S. Supreme Court has held that for any patent infringement damages award the patent holder must “give evidence tending to separate or apportion the defendant’s profits and the patentee’s damages between the patented feature and the unpatented features, and such evidence must be reliable and tangible, and not conjectural or speculative; or he must show, by equally reliable and satisfactory evidence, that the profits and damages are to be calculated on the whole machine, for the reason that the entire value of the whole machine, as a marketable article, is properly and legally attributable to the patented feature.” *Garretson v. Clark*, 111 U.S. 120, 121 (1884). From this, our jurisprudence has developed what are now known as the principle of “apportionment” and the “entire market value rule”, or “EMVR”.

These principles apply when determining a royalty base to be used, along with an appropriate rate, in calculating a per-unit reasonable royalty. The EMVR provides that the patent holder may use the entire market value of the defendant’s multi-component product as the base only if the patented invention drives demand for the end product. *See Ericsson, Inc. v. D-Link Sys., Inc.*, 773 F.3d 1201, 1227 (Fed. Cir. 2014). If the patent holder cannot establish that the invention drives demand for the product, and thus is not entitled to use the entire market value of the product as the base, then the patent holder must, in some fashion, apportion the value contributed by the invention to the final product. *Id.* at 1226.

### III. THE “SMALLEST SALABLE PATENT-PRACTICING UNIT”: ORIGINS AND DEVELOPMENT

#### A. Genesis of the SSPPU: *Cornell University v. Hewlett-Packard Co.*

The term “smallest salable patent-practicing unit” first appeared in 2009, in an opinion by Judge Rader sitting as a trial judge by designation in N.D.N.Y. *Cornell Univ. v. Hewlett-Packard Co.*, 609 F. Supp 2d 279, 283 (N.D.N.Y. 2009) [hereinafter *Cornell II*]. *Cornell* involved a single patent that, “[b]y achieving multiple and out-of-order processing . . . enhances the throughput of [computer] processors with multiple functional units”. *Id.* at 283. The parties agreed that the patent read solely on a component of a computer processor: “the claimed invention is a small part of the IRB, which is a part of a processor, which is part of a CPU module, which is part of a ‘brick,’ which is itself only part of the larger server.” *Id.*

Cornell’s damages expert “sought to testify that the jury should compute damages using a royalty base encompassing Hewlett-Packard’s earnings from its sales revenue from its entire servers and workstations”. *Cornell II*, at 284. Judge Rader interrupted the trial to hold a *Daubert* hearing on the testimony and ruled that neither Cornell nor its damages expert had adequately shown that the entire market value rule applied. *Cornell Univ. v. Hewlett-Packard Co.*, No. 01-CV-1974, 2008 WL 2222189, at \*2 (N.D.N.Y. May 27, 2008) (“Where, as here, . . . sound economic and factual predicates are absent from a reasonable royalty analysis, a district court must exercise its discretion to exclude the proffered testimony.”) [hereinafter *Cornell I*]. Judge Rader did not invoke SSPPU in the *Daubert* opinion, but found that the expert’s testimony failed to properly apportion between the claimed invention and the accused products. *Id.* This failure was particularly problematic in light of HP’s “ordering ‘menus’ provid[ing] price breakdowns for individual ‘processor modules’ independent of the server systems they may be

incorporated with.” *Id.* Cornell’s damages expert offered no reason why those processor module prices could not be used to determine a royalty base. *Id.*

After Judge Rader excluded the testimony based on server prices, Cornell’s expert testified at trial that the proper royalty base was the CPU brick—a component of the server that included multiple processors and other components. Based on the CPU brick testimony, the jury awarded damages of over \$184 million. *Cornell II*, 609 F. Supp. 2d at 282. HP moved for JMOL, and Judge Rader reduced the royalty base to the processors and reduced the damages award accordingly. *Id.* at 290. Once again, Judge Rader held that Cornell’s expert had not provided any evidence that the invention drove demand for the CPU bricks such that the entire market value rule applied:

“[Cornell] exceeded again this court’s direction and proceeded to attempt to show economic entitlement to damages based on technology beyond the scope of the patented invention. . . . Notably, Cornell chose this hypothetical royalty base in favor of another alternative more clearly relevant to the value of the patented invention—the revenue Hewlett-Packard would have earned had it sold each infringing processor as just that, a processor, without any additional non-infringing components.” *Id.* at 284-85

Judge Rader’s opinion made clear that the concern was with “evidence that would mislead the jury to award damages far in excess of their compensatory purpose”. *Id.* at 284. The focus was on the belief that juries may be unduly swayed by large revenue figures that have not first been shown to relate to the invention. That risk can be mitigated by selecting a royalty base more closely related to the invention.

While the court in *Cornell II* criticized the plaintiff’s expert for not choosing the “smallest salable patent-practicing unit” as the royalty base, the opinion did not claim to be announcing a new substantive rule. Nor did the court hold that the royalty base in all cases and all contexts must be a component of a multi-component product. Rather, the SSPPU concept was used in *Cornell II* to underscore the point that the expert failed to adhere to the court’s prior

guidance regarding apportionment of value under *Garretson*. *Id.* Rather than choosing as his royalty base the smallest unit that HP offered for sale and that incorporated the invention (*i.e.*, an individual processor) the expert focused on the “processor brick”, which included multiple processors together with other elements. In an exercise of its discretionary authority in matters pertaining to the admissibility of evidence and, in particular, to the assessment of patent infringement damages, the court ruled that the expert’s testimony was not well-grounded economically, was likely misleading to the jury and resulted in an excessive damages award. *Id.*

In sum, the court in *Cornell II* merely applied the apportionment principle of *Garretson*. No sweeping new rule was established. Rather, the court’s determination was tied to the particular facts of the case, the particular choice made by Cornell and its expert to ignore the court’s prior guidance, and the risk of misleading lay jurors.

#### **B. SSPPU in the Federal Circuit**

Subsequent to *Cornell*, the Federal Circuit applied the SSPPU concept in three cases—all of them involving jury trials.<sup>2</sup> All of these cases arose during an upwelling of concern about the perceived risk of runaway jury verdicts, and every one of them addresses that concern, reinforcing the point that SSPPU is an evidentiary consideration used to implement the apportionment principle in situations where there is risk of juror confusion.

In a recent case, the Federal Circuit provided important guidance on the law of patent infringement damages, making clear that SSPPU is not a mandatory, substantive requirement of damages law. Rather it is an “evidentiary principle . . . assisting in reliably implementing the [apportionment] rule when—in a case involving a per-unit royalty—the jury is

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<sup>2</sup> Excludes *Astrazeneca AB v. Apotex Corp.*, 782 F.3d 1324 (Fed. Cir. 2015), a case in which the court mentions the “smallest salable unit,” but finds the concept inapplicable to the facts of the case (court held that basing the damages calculation on the omeprazole product as a whole was proper because the patented formulation “substantially created the value of the entire omeprazole product”).

asked to choose a royalty base as the starting point for calculating a reasonable royalty award”. *Ericsson*, 773 F.3d at 1226. The court stated that “[t]he point of the evidentiary principle is to help our jury system reliably implement the substantive statutory requirement of apportionment of royalty damages to the invention’s value.” *Id.* And further, “It is not that an appropriately apportioned royalty award could never be fashioned by starting with the entire market value of a multi-component product—by, for instance, dramatically reducing the royalty rate to be applied in those cases—it is that reliance on the entire market value might mislead the jury, who may be less equipped to understand the extent to which the royalty rate would need to do the work in such instances.” *Id.* at 1227.

The court’s specific holding regarding the application of SSPPU in *Ericsson* is also illuminating. The defendant had asked the trial court to exclude testimony by the patentee’s damages expert that relied on comparable licenses using a whole-device royalty base. *Id.* at 1225. The trial court allowed the testimony. On appeal, the defendant invoked the SSPPU concept to argue that the district court’s decision was incorrect. The Federal Circuit upheld the decision below, finding that it was appropriate for the district court to allow the testimony, despite the fact that it relied on licenses using a whole-device royalty base while the patents at issue read only on a component of the device. The Federal Circuit explained, “As the testimony at trial established, licenses are generally negotiated without consideration of the EMVR, and this was specifically true with respect to the Ericsson licenses relating to the technology at issue. Making real world, relevant licenses inadmissible on the grounds D-Link urges would often make it impossible for a patentee to resort to such license-based evidence.” *Id.* at 1228. *Ericsson* thus confirms that SSPPU is a flexible evidentiary tool, not an unyielding substantive requirement of patent damages law.

In two other Federal Circuit cases, the court likewise focused on the risk of juror confusion, using the SSPPU concept as a guideline in evaluating damages theories presented to juries. In *VirnetX, Inc. v. Cisco Sys., Inc.*, 767 F.3d 1308 (Fed. Cir. 2014), the patentee claimed that Apple iOS products (e.g., iPhones) were the smallest salable unit, and therefore the proper royalty base. *Id.* at 1327-28. The Federal Circuit held that the fact of a multicomponent product being the SSPPU did not compel the conclusion that that product was the appropriate royalty base to be presented to a jury. *See id.* at 1327 (“[R]eliance on the entire market value of the accused products . . . ‘cannot help but skew the damages horizon for the jury.’” (quoting *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1320 (Fed. Cir. 2011))). As the court explained, “the smallest salable unit approach was intended to produce a royalty base much more closely tied to the claimed invention than the entire market value of the accused products” and was “simply a step toward meeting the requirement of apportionment. Where the smallest salable unit is, in fact, a multi-component product containing several non-infringing features with no relation to the patented feature (as VirnetX claims it was here), the patentee must do more to estimate what portion of the value of that product is attributable to the patented technology.” *Id.*

*LaserDynamics* involved a patent on optical disc drives included in laptop computers. *LaserDynamics, Inc. v. Quanta Computer, Inc.*, 694 F.3d 51, 56 (Fed. Cir. 2012). The patentee had granted numerous licenses to the patent-in-suit for lump-sum royalties. *Id.* at 57-58. At trial, the patentee’s damages expert testified that those licenses should be disregarded in determining damages and instead calculated a running royalty using the price of laptops as the royalty base. *Id.* at 67-68. The Federal Circuit held that there was no evidence the patented feature drove demand for laptops, and again raised concerns about jury confusion. *Id.* at 68 (“Admission of such overall revenues, which have no demonstrated correlation to the value of

the patented feature alone, only serve to make a patentee’s proffered damages amount appear modest by comparison, and to artificially inflate the jury’s damages calculation beyond that which is ‘adequate to compensate for the infringement.’” (quoting *Uniloc*, 632 F.3d at 1320)).<sup>3</sup>

Most recently, the Federal Circuit addressed the SSPPU concept in *CSIRO*. After a bench trial on damages, the district court applied a per-unit royalty based on the parties’ pre-suit negotiations.

On appeal, Cisco argued that the district court erred by failing to use the SSPPU (the Wi-Fi chip) as the base for the reasonable royalty. *Id.* at 1301. The Federal Circuit flatly rejected Cisco’s argument, holding that “The rule Cisco advances—which would require all damages models to begin with the smallest salable patent-practicing unit—is untenable. It conflicts with our prior approvals of a methodology that values the asserted patent based on comparable licenses.” *Id.* at 1303. The Federal Circuit held that the district court correctly “did not apportion from a royalty base at all. Instead, the district court began with the parties’ negotiations.” *Id.* at 1302. And the Federal Circuit reaffirmed its prior holdings that actual market valuation is a reliable method of apportionment, regardless of the royalty base employed:

Where the licenses employed are sufficiently comparable, this method is typically reliable because the parties are constrained by the market’s actual valuation of the patent. . . . Moreover, . . . otherwise comparable licenses are not inadmissible solely because they express the royalty rate as a percentage of total revenues, rather than in terms of the smallest salable unit. Therefore, adopting Cisco’s

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<sup>3</sup> Both *Virnetx* and *LaserDynamics* rely heavily on *Uniloc*, which, while not using the term SSPPU, makes clear that the concern is with juror confusion. In *Uniloc*, it was undisputed that the patented feature did not drive demand for the accused products (Microsoft’s Word and Windows software), but the patentee’s expert nonetheless used the entire market value of the software as a “check” on his royalty calculation. *Uniloc*, 632 F.3d at 1318-19. The Federal Circuit found that this reference to the entire market value of the accused products was not linked to the value contributed by the patented invention, and therefore ran a significant risk of misleading the jury. *Uniloc*, 632 F.3d at 1320 (“This case provides a good example of the danger of admitting consideration of the entire market value of the accused product where the patented component does not create the basis for customer demand. As the district court aptly noted, ‘the \$19 billion cat was never put back into the bag even by Microsoft’s cross-examination of [Uniloc’s damages expert], and in spite of a final instruction that the jury may not award damages based on Microsoft’s entire revenue from all the accused products in the case.’”).

position would necessitate exclusion of comparable license valuations that . . . may be the most effective method of estimating the asserted patent's value.

*Id.* at 1303.

*CSIRO* effectively lays to rest any contention that SSPPU is a fixed, substantive rule of patent law. It is, rather, an evidentiary tool, designed primarily for jury cases (as again reaffirmed in *CSIRO*, *id.* at 1302) and aimed at apportioning the value of a patented invention before the damages question is put to a jury, to prevent jurors from being misled by large revenue or profit numbers, thereby addressing a perceived risk of runaway jury verdicts.

#### **IV. CORRECTING MISUNDERSTANDINGS ABOUT THE SSPPU CONCEPT**

Despite the purpose and application of SSPPU as explained in the case law above, some seek to export SSPPU to other contexts and deploy it for purposes for which it was not intended. Some even claim SSPPU is the definitive rule for determining a royalty base and applies in all cases and all contexts (*i.e.* not only in U.S. jury cases). These claims are incorrect.

##### **A. SSPPU Applies Nearly Exclusively in Jury Trials.**

The case law makes clear that the SSPPU concept is limited in application. In over 75 district court decisions that have considered the SSPPU concept, all but one have been in jury trials.<sup>4</sup> Cases applying the SSPPU concept make clear that the motivating concern is jury confusion.<sup>5</sup>

The concern animating the SSPPU approach does not exist, or at least has much less force, outside the jury context. For example, there is no similar concern in a bench trial.

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<sup>4</sup> The one exception is *In re Innovatio IP Ventures*, 2013 WL 5593609 (N.D. Ill. Sept. 27, 2013), where the court in a bench trial applied the SSPPU to determine the royalty base for damages calculation; the court used market information, such as the average price and profit of a Wi-Fi chip, to serve as the royalty base.

<sup>5</sup> District courts continue to consider the SSPPU framework in limited circumstances (*i.e.*, cases involving jury trials and a small number of patents). *See, e.g., Tviim, LLC v. McAfee, Inc.*, 2015 WL 4448022 (N.D. Calif. 2015); *Wonderland Nurserygoods Co. v. Thorley Indus. LLC*, 2015 WL 5021416 (W.D. Pa. 2015); *Veracode, Inc. v. Appthority, Inc.*, 137 F. Supp. 3d 17 (D. Mass. 2015); *Emerson Elec. Co. v. Suzhou Clevea Elec. Appliance Co.*, 2015 WL 8770712 (E.D. Mo. 2015); *Better Mouse Co. v. SteelSeries ApS*, 2016 U.S. Dist. LEXIS 16611, at \*1 (E.D. Tex. 2016); *ART+COM Innovationpool GmbH v. Google Inc.*, 2016 U.S. Dist. LEXIS 56501, at\*1 (D. Del. 2016).

There is no reason to believe that district court judges would fail to understand the rule of apportionment and the mathematical interactions between royalty base and royalty rate when performing a reasonable royalty analysis. On the contrary, the law accords broad discretion to district court judges to determine damages methodologies, because they are able to, and do, carefully analyze the reliability of proffered damages models. And where those models fail to properly apportion between patented and unpatented values, judges do not hesitate to reject them. *See, e.g., CSIRO v. Cisco Sys., Inc.*, No. 6:11-cv-343, 2014 WL 3805817, at \*7 (E.D. Tex. July 23, 2014) (rejecting patentee’s damages model that failed to “carefully tie proof of damages to the claimed invention’s footprint in the market place”).

Additionally, it would be neither appropriate, nor practical, to screen judges from revenue or profit information. Justice requires judges to be aware of all the pertinent facts of a case, and we rely on judges to render fair decisions in view of all the facts, not in ignorance of them. It would be impractical to put blinders on judges, for the simple reason that judges are the gatekeepers who determine what evidence is admissible. Thus, if one party sought to exclude evidence relating to a royalty base beyond the SSPPU, the judge would necessarily become acquainted with the evidence through ruling on its admissibility. Courts are clear that prophylactic rules designed to protect against basic misunderstandings or miscalculations are not required in bench trials: “[I]n a bench trial, the . . . judge can also exclude those improper inferences from his mind in reaching a decision.” *Gulf States Utilities Co. v. Ecodyne Corp.*, 635 F.2d 517, 519 (5th Cir. 1981).

**B. The SSPPU Concept Does Not Limit the Freedom of Private Parties Negotiating a License Agreement.**

Some advocates contend that the SSPPU concept determines the royalty base that must be used in patent licenses. Nothing could be farther from the truth. No case has ever so held, and it would be bad policy.

Parties negotiating license agreements are free to negotiate whatever mutually agreeable terms make commercial sense for them.<sup>6</sup> There is no requirement that private parties negotiating license agreements first go through all the patents in question and identify the SSPPU for each one. In fact, to do so would be incredibly inefficient. Instead, parties tend to negotiate licenses that cover whole products, or classes of products, and whole portfolios of patents potentially applicable to those products. As a result, parties tend to use whole products as the royalty base for license agreements. This approach is sensible and efficient in terms of reduced transaction costs, and highly preferred for all parties, particularly when significant numbers of patents are involved.

The business people on both sides of these transactions are familiar with the revenues and profits (or potential revenues and profits where new products are concerned) associated with the products in question. They cannot be screened from this information as a practical matter, nor could anyone seriously suggest they should be. Thus, in the context of private license negotiations, even more than bench trials, while the SSPPU approach is available to negotiators who wish to refer to it, it has no necessary bearing on how parties negotiate or upon what terms they agree.

Indeed, an attempt to dictate that business people must negotiate patent licenses on the basis of the SSPPU for each licensed patent and each licensed product would be highly

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<sup>6</sup> Subject, of course, to the rules of antitrust/competition laws.

counterproductive. Such a rule would require parties to engage in patent-by-patent and component-by-component negotiations, greatly magnifying transaction costs. Instead, parties should remain free to use all the valuation and efficiency tools available to them, without limitation. This leads to effective negotiations and equitable agreements for all, as it has for generations.

**C. The SSPPU Concept Is Not Useful in Estimating the Value of a License to a Large and Diverse Portfolio.**

Some parties have advocated that the SSPPU approach should apply to licenses of large and diverse portfolios of patents. Again, no court has so held. Rather, the cases referencing the SSPPU concept have in nearly all cases involved small numbers of patents.<sup>7</sup> *See Cornell II*, 609 F. Supp. 2d at 282 (single patent); *Ericsson*, 773 F.3d at 1209-1211 (three patents); *VirnetX*, 767 F.3d at 1315 (two patents); *LaserDynamics*, 694 F.3d at 56 (single patent). SSPPU has never been applied to determine a reasonable royalty base for a large, diverse portfolio of patents.

As suggested above, attempting to apply the SSPPU concept to a large portfolio of patents would be impractical. The SSPPU would almost certainly be different for different patents, and it could be different for different claims within a single patent. The task of identifying and valuing the SSPPU within each affected product and for each patent or claim, then applying an appropriate royalty rate to each patent/component combination to calculate the total amount owed would be overwhelming.

It is far more efficient, particularly in private license negotiations, to start with the proposition that all of the licensee's products (or its products within a certain class, *e.g.*, cellular

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<sup>7</sup> In over 75 district court cases that have considered the SSPPU, all but one involved fewer than eight patents, with over 80% of the cases entailing three or fewer patents. The one exception is *In re Innovatio IP Ventures*, 2013 WL 5593609 (N.D. Ill. Sept. 27, 2013), a case involving 19 patents.

telephones) will be licensed under all of the patent holder's patents. And this, unsurprisingly, is precisely where typical license negotiations start, allowing the licensee to obtain what licensees want: freedom of operation. And the patent holder obtains an easy-to-administer license. The natural base to use for each product in such a license is the product itself, so that all aspects or components of the product that could infringe any of the licensor's patents will be licensed. Also, where a large and diverse portfolio is concerned, the patents likely cover a number of aspects or components of the products in question, and some may cover entire products. Where the basic all-products/all-patents framework is agreed, the parties can proceed efficiently to set a royalty rate (and ancillary terms).

In the litigation context, if a case arose requiring a judge or a jury to determine a royalty for a large portfolio of patents, it would be unworkable, for the reasons stated above, to require that determination to be made patent-by-patent for thousands of patents. The sensible approach would be to proceed as knowledgeable business people do, using accused products as the royalty bases, and assessing an appropriate royalty rate. The concern that jurors might be misled by large revenue or profit figures would have considerably less force in a case involving hundreds or thousands of patents covering different aspects of the accused products. It would be quite rational in that circumstance for a court to use its discretion in damages matters to adopt the simplifying assumption that the royalty base is the entire product, and let the parties litigate over the royalty rate.

**D. The SSPPU Concept Has No Automatic Relevance to Standard-Essential Patents or FRAND.**

There is also no support for the contention that SSPPU is a requirement of fair, reasonable and nondiscriminatory ("FRAND") terms and conditions under which holders of

standard-essential patents (“SEPs”) often agree to grant licenses. No case has imposed such a requirement.

There are both policy and practical reasons why it would be inappropriate to engraft SSPPU onto FRAND. A FRAND licensing commitment is a contractual arrangement designed to ensure implementers will have access to standardized technologies while also giving innovators a sufficient return on their investment in R&D, so that they will continue to offer technologies to standards development organizations (“SDOs”) for standardization. In almost all cases where innovators make technical contributions to SDOs and enter into licensing commitments, they do so against the background of a decades-long tradition of bilaterally negotiated license agreements employing the intentionally broad FRAND requirement. Changing those ground rules now would undermine the basis of the FRAND bargain, and could seriously reduce incentives to innovators. This would be fundamentally unfair to those who have relied on the FRAND bargain, and also undercut incentives for innovators to participate in standards development going forward, a highly undesirable policy outcome.

Importing SSPPU into the standards context is also problematic for a number of practical reasons. First, FRAND negotiations are bilateral contract negotiations between private parties. As noted above, SSPPU does not necessarily apply in that context. Second, FRAND negotiations often involve large and diverse portfolios of patents, and, again, the SSPPU concept cannot be applied in such cases. Third, a FRAND commitment is a contract between an innovator and an SDO, with implementer-licensees as third-party beneficiaries. The meaning of FRAND is dependent on the IPR policy of the applicable SDO. The contractual documents do not generally refer to the SSPPU concept, and it is inappropriate to impose SSPPU retroactively. Fourth, only one SDO, the IEEE, has recently adopted an explicit SSPPU reference in its IPR

policy, and that decision was hotly contested. The IEEE controversy demonstrates that there is no consensus on the advisability of incorporating SSPPU into FRAND negotiations. What is clear is that SSPPU is neither inherent in FRAND nor traditionally understood as part of FRAND. Thus, reading SSPPU into FRAND is untenable as a matter of contract law.

**E. SSPPU Cannot Be Used To Override Actual Market Value.**

Case law in the realm of patent infringement damages has long recognized that direct, market-based information in the form of actual licenses is very potent evidence of the value of patented technology. As the Federal Circuit emphasized in *Versata*, where there is “an established royalty”, that market-based rate should be used as the basis for calculating the reasonable royalty in preference to other, more speculative, calculations. 717 F.3d at 1267-68. Relatedly, the Federal Circuit in *Ericsson* and *CSIRO* reaffirmed use of actual licenses as evidence of a market-based royalty, regardless of whether those licenses were negotiated under the SSPPU approach. 773 F.3d at 1226-28; 2015 WL 7783669, at 1303.<sup>8</sup>

These cases belie any suggestion that the SSPPU approach should somehow trump market evidence. Indeed it would be absurd to conclude that SSPPU should prevail over market-based evidence. Consider for a moment that proponents of SSPPU would never advocate its use unless they expected it to result in *lower* royalty awards than might otherwise be obtained. But this amounts to a suggestion that an adjudged infringer should pay *less* in damages than willing licensees paid in the open market and without putting the patent holder to the trouble and expense of litigation. That would fly in the face of the statutory requirement of § 284 that courts award damages sufficient to compensate the patent holder. Moreover, it would turn the patent

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<sup>8</sup> In a more recent decision, a district court held that the average sales price of an infringing product can serve as the SSPPU, thus collapsing the smallest salable unit into a market-based valuation of the rights appropriated. See *Tviim, LLC v. McAfee, Inc.*, 2015 U.S. Dist. LEXIS 94189, at \*5 (holding that the average sales price information, which the damages expert used as the SSPPU, is “plainly relevant for the limited purpose for...serving as the starting point for the “apportioning down” of the royalty base to a reasonable estimate of the value of the accused feature”).

law's system of incentives on its head. Instead of rewarding innovators for creating new technologies, the system would reward infringers for misappropriating them. Infringers would have no reason to avoid infringement, let alone seek or take a license, until forced to do so through litigation.

**F. SSPPU Does Not Compel Using the Cost of a Component as the Royalty Base for Calculating Damages.**

Some argue that the SSPPU concept requires the cost of one component of a multicomponent product to operate as a cap on the royalty base when assessing patent infringement damages. Effectively, they argue that the royalty should be capped at the price of the component. Certainly there may be cases, like *Cornell*, where the value of an invention subsists in a component of a component of a component of an end product, and the reasonable royalty on that invention arguably should be limited to some fraction of the value of an appropriate component. But this is not always or even generally the case. Frequently, a patent claims an invention operationalized in a multicomponent device, such as a computer or a smartphone, and the true value of the invention lies in the functionality it enables, not in a disembodied chip that might serve as part of the invention's implementation. To paraphrase the district judge in *CSIRO*, the value of a book is not measured by the cost of the ink, paper, and binding used to make it. Likewise, the value of a functioning device, such as a smartphone, is greater than the sum of the costs of its components. No reason exists to conclude that the value of a technology or a collection of technologies enabling a product to function must necessarily be limited to the cost of the product's constituent parts rather than the value of the whole.

A key principle of the hypothetical negotiation analysis is that the use of an invention has value to the person using it. The negotiation between the patent holder and the technology user (infringer) is, in its essence, a process to arrive at a number between the

maximum amount of that value that the user would pay for the right to use the technology and the minimum amount the patent holder would accept. *See* Cristina Caffarra & Pierre Régibeau, *Patent Explosion and Patent Wars: Hold-Up, Royalties and Misunderstandings over ‘Market Value’*, *European Competition Law Annual 2014*, 326-27 (forthcoming); *see also* *Trans-World Mfg. Corp. v. Al Nyman & Sons, Inc.*, 750 F.2d 1552, 1568 (Fed. Cir. 1984) (“A reasonable royalty is the amount that a person, desiring to manufacture, use, or sell a patented article, as a business proposition, would be willing to pay as a royalty and yet be able to make, use, or sell the patented article, in the market, at a reasonable profit.”)

This principle is well illustrated by the hypothetical scenarios presented in the Introduction. The licensing fee a chemist receives from a pharmaceutical company will depend not on the cost of the ingredients for a drug, but on the value of the invention to the company. Similarly, the value an electronics manufacturer derives from an invention is not tied to the cost of components implementing that invention, which can vary depending on independent market forces. Rather, the value depends on the profit the manufacturer is able to make from the invention.

**G. SSPPU Neither Compels Nor Supports Using the Cost of a Component as the Royalty Base.**

Some advocates of SSPPU declare that it is a definitive rule for determining a royalty base, in any context. This would, of course, be inconsistent with *CSIRO*, where the Federal Circuit rejected the argument that SSPPU must be employed in all damages models and affirmed the district court’s use of a non-SSPPU-based damages analysis. Moreover, as discussed above, SSPPU does not apply and is inappropriate in most circumstances—including any situation other than a U.S. patent infringement jury trial. And, even where it does apply, SSPPU is a guide to, not a definition of, the proper royalty base.

The case law referencing SSPPU does not hold or imply that SSPPU definitively sets the royalty base for a reasonable royalty calculation. In *VirnetX*, the Federal Circuit held that the proper royalty base to be presented to a jury may be *less* than the SSPPU. 767 F.3d at 326-28. In *Ericsson*, the court held that licenses using a royalty base *greater* than the SSPPU could be presented to the jury. 773 F.3d at 1225-29. In *Cornell* itself, the court did not hold that the only acceptable royalty base was the SSPPU, but rather that the expert's testimony did not provide a sound economic basis for focusing his damages analysis on a larger unit. *Cornell II*, 609 F. Supp. 2d at 284-85. In *CSIRO*, the Federal Circuit held that courts need not apply SSPPU at all.

All these cases rely on the Supreme Court's decision in *Garretson* for the guiding principle of apportionment. *Garretson* itself did not refer to the SSPPU concept. It did not even hold that the *royalty base* must be apportioned. The Supreme Court ruled only that the patent holder's *damages* must be commensurate with the value contributed by the patented invention to the defendant's product. How that should be accomplished was not specified. Arithmetically, if an appropriate royalty on a \$1000 product would be \$10, that result can be obtained just as well by applying a 1% royalty rate to a \$1000 royalty base, or by reducing the base to \$100 and applying a 10% rate.

**H. If SSPPU Were Applied as an Actual Rule, It Would Defeat the Goal of Damages Law.**

The broader body of case law covering patent infringement damages makes clear that a definitive SSPPU rule would be inappropriate. The Federal Circuit has repeatedly rejected rigid approaches to patent damages and has emphasized that the trial court has broad discretion to fashion a damages methodology appropriate to the particular case before it. *See, e.g., Mars, Inc. v. Coin Acceptors, Inc.*, 527 F.3d 1359, 1366 (Fed. Cir. 2008) (“The correct measure of

damages is a highly case-specific and fact-specific analysis.”), *amended on other grounds*, 557 F.3d 1377 (Fed. Cir. 2009); *Hebert v. Lisle Corp.*, 99 F.3d 1109, 1119 (Fed. Cir. 1996) (“The adequacy of the damages measure depends on the circumstances of each case.”); *Minco, Inc. v. Combustion Eng’g, Inc.*, 95 F.3d 1109, 1118 (Fed. Cir. 1996) (“Because fashioning an adequate damages award depends on the unique economic circumstances of each case, the trial court has discretion to make important subsidiary determinations in the damages trial, such as choosing a methodology to calculate damages.”); *Cornell II*, 609 F. Supp. 2d at 286 (“The methodology of assessing and computing damages under 35 U.S.C. § 284 is within the sound discretion of the district court.” (quoting *TWM Mfg. Co. v. Dura Corp.*, 789 F.2d 895, 898 (Fed.Cir.1986)). Similarly, the Supreme Court has “more than once cautioned that courts should not read into the patent laws limitations and conditions which the legislature has not expressed”. *Bilski v. Kappos*, 561 U.S. 594, 602 (2010) (quoting *Diamond v. Diehr*, 450 U.S. 175, 182 (1981)); see also *Octane Fitness, LLC v. ICON Health & Fitness, Inc.*, 134 S. Ct. 1749, 1756 (2014) (courts should not “superimpose[] an inflexible framework onto statutory text that is inherently flexible”); *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 419 (2007) (“Helpful insights . . . need not become rigid and mandatory formulas . . .”). In *Ericsson* the Federal Circuit invoked this spirit of flexibility to accommodate diverse, case-specific facts, observing “that an appropriately apportioned royalty award could . . . be fashioned by starting with the entire market value of a multi-component product by, for instance, dramatically reducing the royalty to be applied in those cases”. 773 F.3d at 1227. All of this shows that, as a matter of law, SSPPU cannot be viewed as a rigid definition of royalty base. As the jurisprudence around patent damages continues to evolve, courts are questioning SSPPU’s broad relevance and applicability in damage calculations.<sup>9</sup>

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<sup>9</sup> See, e.g., *Genband US LLC v. Metaswitch Networks Corp.*, 2016 U.S. Dist. LEXIS 2655, at \*14-16 (E.D. Tex.

The overarching purpose of the patent laws is to incentivize innovation by creating enforceable property rights and facilitating transactions involving those rights. Patent infringement damages awards serve that purpose by compensating the patent holder for the use the infringer made of the invention. Section 284 of the Patent Act provides flexibility to assure the patent holder receives *full* compensation. And, consistent with the objective of maintaining enforceable intellectual property rights and orderly exchanges based on those rights, damages awards should incent lawful behavior. That is, they should discourage infringement and encourage users of patented technologies to seek licenses. Inflexible rules that interfere with these objectives can only serve to depress innovation incentives and should be avoided.

The debate around the reach—or overextension—of the SSPPU concept is at its core not about interpretation of the law or particular legal decisions; it is about business models, and about using the law as a tool to express a preference for the business model pursued by implementers of others’ technological innovation over the business model of creators of innovative new technologies. Make no mistake—applying the SSPPU concept as some advocates suggest would unquestionably represent a strong statement of preference, and conferring of major competitive advantage in favor of implementers over innovators, unquestionably devaluing innovation in the process. Courts and Congress both have historically declined to express such a preference, striving instead to maintain a system that over time has worked a balance between the interests of innovators and implementers. Indeed, there is no

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2016) (holding that when an expert’s damages analysis attempts to directly apportion the royalty base to the precise value of the patented features, “it is not necessary...to identify or rely upon the SSPPU”); *Better Mouse Co., LLC v. Steelseries APS*, 2016 WL 115686, at \*8 (E.D. Tex. 2016) (damages expert “does not always need to identify the smallest salable unit to satisfy apportionment”); and *ART+COM Innovationpool GmbH v. Google Inc.*, 2016 U.S. Dist. LEXIS 56501, at \*46 (D. Del. 2016) (questioning “whether there is a ‘smallest salable unit’ at all” when a patent is used in a service that is not sold, but rather monetized through various interrelated and intermingled sources of revenue which “do not break down nicely for purposes of proving damages in patent litigation”).

indication whatever that the historical balance has shifted in a manner calling for major destabilization as sought by interests pushing general applicability of SSPPU.

A major national policy change governing innovation incentives, especially one quite affirmatively designed to depress innovation incentives, is simply irresponsible absent careful study and clear data mandating such a change. We are aware of none. We see such a change as simply making it easier for free-riders to cheaply take others' property. We see the impact as troubling across the board, invariably leading to lower levels of innovation investment, and causing less standardization of innovative technologies. Hardest hit will be the bone-grinding innovation involved in creating and standardizing highly complex technologies such as those pervading smart phones, where many development and standardization efforts fail, costs soar, and licensing is frequently the only mechanism available to recoup investment. Given what we know, a move to intentionally discourage innovation in key technological areas would constitute very bad policy indeed.

## **V. CONCLUSION**

An understanding of the origins and boundaries of the SSPPU concept is crucial to avoid erroneously applying it in contexts for which it was not intended. The concept exists as a tool to implement the *Garretson* apportionment requirement in the context of patent infringement jury trials. All opinions referring to SSPPU have recognized that the motivating concerns are damages apportionment and the potential for jury confusion. No court has ever held that SSPPU is a hard-and-fast substantive requirement of patent law, and indeed the Federal Circuit has held just the opposite in *CSIRO*.

Efforts by some technology implementers to broaden the scope and applicability of the SSPPU concept are legally unfounded and unsound as a matter of patent law policy. It is to be expected that implementers will claim they pay "too much" in royalties; undoubtedly they

would prefer to pay nothing for the technologies they use. But such claims have no legal merit and do nothing to encourage innovation. Instead they devalue innovation, relegating the future to a static status quo in favor of an “I’ll get mine now” attitude.

The urged expansion and misapplication of the SSPPU concept is dangerous. If successful, it will reduce incentives for innovation and stifle R&D investments, particularly in standards-dependent fields. Courts and other governmental authorities should be wary and take care to confine SSPPU to its proper scope and context.