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Introduction

In a series of recent decisions computing damages for patent infringement,² the Court of Appeals for the Federal Circuit applied the century-old rule of apportionment articulated by the Supreme Court in 1884 in *Garretson v. Clark.*³ The rule addresses damages when only one sub-component of a multi-component product infringes the asserted patent. It limits damages to the "value attributable to the infringing features of the product, and no more,"⁴ to avoid "improper[] compensate[ion] for non-infringing components."⁵ As with any other remedy doctrine, apportionment can affect competition in technology markets because court-awarded damages provide a benchmark used in patent valuation and license negotiation.⁶ A damages rule that yields unpredictable results can frustrate attempts to agree on value through bilateral negotiation, impeding licensing and leading to unnecessary litigation.

Background

Modern products—particularly in the information, communications and technology sectors—may embody hundreds or thousands of patents.⁷ Isolating the contribution of any one patent's claimed technology to the end product can prove analytically challenging both for the courts and for private parties. However, when there is no independent market for the claimed technology, it is necessary to do so in order to determine patent value. Failing to properly isolate the contribution of the claimed technology can inflate damage awards by compensating patent holders for aspects of the accused products not covered by their patents.

Historically, many litigants computed reasonable royalties by multiplying a royalty rate over a royalty base.⁸ They often established rates by evidence of rates in comparable licenses.⁹ Plaintiffs could inflate damages by applying such rates to the largest royalty base possible.¹⁰ To aid in proper calculation, doctrines such as the Entire Market Value Rule (EMVR) and Smallest Saleable Patent Practicing Unit (SSPU) governed base selection, dictating when it would be appropriate to use an end-product or its subcomponent as a base.¹¹

Nevertheless, the focus on base alone could not address all issues presented at trial. Some patented features do not translate into a separate salable royalty base. ¹² And some technologies do not generate revenue from the sale of patented devices. ¹³ The Federal Circuit has recently used apportionment to address these varied issues, focusing on the value of the invention to the end product:

[W]e have repeatedly held [that] "[t]he essential requirement" for reliability under *Daubert* "is that the ultimate reasonable royalty award must be based on the incremental value that the patented invention adds to the end product."¹⁴

To make the determination, the court relies on apportionment:

[A]pportionment—is "the governing rule" "where multicomponent products are involved." Consequently, to be admissible, all expert damages opinions must separate the value of the allegedly infringing features from the value of all other features.¹⁵

In laying out the rule, the court explained that rules governing royalty base serve as "principles to aid courts in determining when an expert's apportionment model is reliable." When the base suggested by those rules includes "non-infringing features with no relation to the patented feature ... the patentee must do more" to satisfy apportionment. 17

The Historical Context of Apportionment

In recent decisions, the Federal Circuit has repeatedly cited to the Supreme Court's 1884 *Garretson v. Clark* decision as the basis for the apportionment rule. ¹⁸ *Garretson* requires that the patentee "give evidence tending to separate or apportion the ... the patentee's damages between the patented feature and the unpatented features." ¹⁹ Such evidence must be "reliable and tangible, and not conjectural or speculative."

At the time the Supreme Court decided *Garretson* in 1884, the law did not grant patent holders the remedy of a reasonable royalty.²¹ Rather, as the Federal Circuit explained, *Garretson* "was decided under an antiquated damages regime,"²² that existed in "the distant past."²³ The "patentee's damages" referred to in *Garretson* were actual damages, limited to lost profits or an established royalty. ²⁴ Courts required that actual damages be "calculated, not imagined and … [not] made without certain data," rejecting "conjectural" royalties.²⁵

In the late 1800's, many patent holders unable to prove actual damages were unable to recover anything other than nominal damages. ²⁶ Over time, courts began to grant "general damages" to provide monetary relief to such patent holders. ²⁷ In 1946, Congress ultimately codified general damages as the reasonable royalties available today. ²⁸

The Federal Circuit's current application of *Daubert*²⁹ to reasonable royalty methodologies reflects its historical beginnings as general damages. In *Apple v. Motorola*, the court "recognized that estimating a 'reasonable royalty' is not an exact science."³⁰ It cautioned that judges "be cautious to overstep [their] gatekeeping role," or to "impose [their] own preferred methodology," observing that their "limited" role "is particularly essential in the context of patent damages." ³¹

The Federal Circuit similarly favors "adaptability" when applying *Garretson*'s apportionment principles to reasonable royalties. ³² *Rembrandt* explained that the apportionment supports "certain general rules," but the "rules are not so precise in their application or scope as to make a single opportunity for compliance clearly or always enough." *CSIRO* further explained that, "under this apportionment principle, 'there may be more that more than one reliable method for estimating a reasonable royalty." Similarly, *Summit 6* explained that "it is common for parties to choose different ... approaches in a single case." They might use comparable licenses, comparison to comparable features in the marketplace, comparison to non-infringing alternatives, and analytical methods focused on the infringer's profits. ³⁶ As a result, "the record may support a range of reasonable royalties, rather than a single value." ³⁷

How Patent Remedies Influence Licensing in Technology Markets

In its 2011 report on the Evolving IP Marketplace, the FTC observed that the rules governing damages for patent infringement can impact competition in markets for technology. Rourt awarded damages provide the backdrop against which many patent licenses are negotiated. Remedies "play a central role ... by establishing the legal shadow in which negotiations occur." They "have a 'ripple effect' on the ... cases in which royalties are negotiated to avert or settle litigation."

Expectations regarding the damages that a court may award—or the upper and lower bound of the range of likely amounts—inform parties' walk-away values when negotiating licenses and settlement. This is particularly the case when parties are negotiating for licenses for individual patents without any technology transfer and after the licensed product is on the market.⁴¹ If either party expects that that court would award damages more favorable than the license offer, the party may be willing to take its chances in court.

If damage awards are unpredictable and parties have divergent expectations regarding the value of a license, licensing through bilateral negotiation is likely to fail. Patent holders may resort to patent infringement litigation, imposing costs upon themselves and their prospective licensees. Or, prospective licensees may abandon their technology for fear of operating without a license. Alternatively, the parties will reach an agreement because one party will accept a value significantly different than its expectation in order to minimize litigation risk. This results in a negotiated royalty untethered from the economic value of the license and which may either overcompensate or undercompensate the patent holder. Long term, a patent system which leads to such licenses will either provide inventors with diminished incentives to innovate or will provide patent holders with misplaced incentives for patent assertion in lieu of other means of monetization.⁴²

The FTC recognized the importance of flexibility in performing reasonable royalty analysis, but it also recognized the need for a consistent framework:

[F]lexibility must be combined with a framework for testing and using the available evidence. Without such discipline, the *Georgia-Pacific* factors provide a grab bag for use by parties seeking to establish whatever reasonable royalty serves their purposes. Their competing claims may bear little or no relationship to each other or to a credible effort to implement the hypothetical negotiation model.⁴³

To address these concerns, the FTC advocated that the "broader application" of this framework "would help increase the accuracy of reasonable royalty awards." ⁴⁴ It recommended that courts adopt an "economically grounded approach" that "replicat[es] the market reward" for the patented innovation. ⁴⁵

Implementing Apportionment at Trial

Recent decisions demonstrate the different methods that parties can use to satisfy the apportionment requirement—and the divergent outcomes each can produce. Decisions recognize that "the record may support a range of reasonable royalties," ⁴⁶ yet often do not explain the breadth of that range. One way to measure the upper and lower

bound of this range is to look at the actual damage values presented by the plaintiff and defendant to the fact finder at trial.

In *CSIRO v. Cisco*,⁴⁷ the accused products were Wi-Fi compatible routers, access points and other wireless network devices.⁴⁸ The asserted patent claimed technology implemented in the baseband processor, radio chip and antenna of these products.⁴⁹ At trial, the plaintiff offered a model that compared the profits realized by the defendant's sale of products with the accused feature with the profits from products without the feature and then "attributed [defendant's] profit premiums on those products" to the asserted patent.⁵⁰ The defendant offered a model based upon rates in a prior technology license.⁵¹ The resulting values were \$30,189,922 and \$1,050,000, respectively.⁵²

In *Summit 6 v. Samsung*,⁵³ the accused products were Samsung's smartphones and tablets that used multimedia messaging service (MMS) to send photographs.⁵⁴ The asserted patent claimed a method of processing and transmitting digital images.⁵⁵ The plaintiff offered a theory starting with the revenues the defendant received by including a camera in its devices and then isolating the portion the value that users derived from sharing photos using MMS.⁵⁶ The defendant presented a damages figure derived from rates in prior licenses to the patent in suit.⁵⁷ The plaintiff's model yielded a \$29,000,000 reasonable royalty,⁵⁸ whereas the defendant's model yielded a \$1,500,000 royalty.⁵⁹

In *Ericsson v. D-Link*,⁶⁰ the accused products were Wi-Fi compliant end products, such as computers and routers.⁶¹ The claimed functionality resided in the Wi-Fi chipset.⁶² The plaintiff offered a damages theory based upon rates in prior license agreements, which yielded a \$0.50 per-unit royalty.⁶³ In contrast, the defendants offered a damages theory based upon isolating the value of the patent from the cost of the chipset, yielding a \$0.009 per-unit royalty.⁶⁴

In *SimpleAir v. Google*,⁶⁵ several message services provided by Google for use in Android telephones were found to infringe a patent related to wireless notifications, "such as a notification alerting a user that an email message has been received."⁶⁶ The plaintiff advanced a theory that started with a value representing customers' willingness to pay for the messaging services and isolated the contribution of the patented technology.⁶⁷ This yielded a \$146,000,000 royalty.⁶⁸ The defendant presented a theory based on the cost of a non-infringing alternative and the price it paid in a comparable transaction.⁶⁹ This resulted in a royalty of no more than \$6,000,000.⁷⁰

In *Rembrandt v. Samsung*,⁷¹ Samsung's smartphones, tablets, and televisions were found to infringe two patents that covered part of the Bluetooth standard.⁷² At trial, the plaintiff advanced a theory that compared the value of chipsets both with and without the feature to derive a per-end-unit royalty for the feature.⁷³ This yielded a range between \$14,500,000 to \$31,900,000.⁷⁴ The defendant advanced a theory based on four prior patent sale and license agreements that yielded a \$500,000 royalty.⁷⁵

As these cases illustrate, there can be an order of magnitude difference in the values proposed by the competing damage theories admitted by trial courts. Since the damages methods presented at trial must be disclosed well in advance through expert discovery, ⁷⁶ these values inform parties' expectations regarding the range of potential damage awards well before judgement. Parties seeking to negotiate a license will have to overcome this divergent range of possible valuations.

Conclusion

Apportionment is a useful principle for guiding reasonable royalty analyses, focusing on the incremental value that patented inventions add to end products. Nevertheless, the doctrine arose under a much more rigid damages framework than the one in place today, and recent decisions have applied apportionment as a general principle guiding the admissibility of expert testimony. As courts apply this test, it remains to be seen whether apportionment provides adequate guidance to courts applying the reasonable royalty framework and whether the developing jurisprudence will provide adequate guidance to market actors valuing patents in the shadow of litigation.

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²See, e.g. Virnetx, Inc. v. Cisco Systems, Inc., 767 F.3d 1308, 1326 (Fed. Cir. 2014); Ericsson, Inc. v. D-Link Systems, Inc., 773 F.3d 1201, 1226 (Fed. Cir. 2014); AstraZeneca AB v. Apotex Corp., 782 F.3d 1324, 1338 (Fed. Cir. 2015); Commonwealth Sci. and Indus. Research Organisation v. Cisco Systems, Inc., 809 F.3d 1295, 1301 (Fed. Cir. 2015).

³ 111 U.S. 120 (1884).

⁴ Commonwealth Sci., 809 F.3d at 1301 (quoting Ericsson, 773 F.3d at 1226).

⁵ Id. at 1302 (quoting LaserDynamics, Inc. v. Quanta Comput., Inc., 694 F.3d 51, 67 (Fed. Cir. 2012)).

⁶ See Fed. Trade Comm'n, The Evolving IP Marketplace: Aligning Patent Notice and Remedies with Competition 57 (2011) ("Although most patent assertions conclude with license agreements or settlements, court awarded damages and injunctive relief 'provid[e] a benchmark' for these negotiations.") (citing workshop comment and testimony).

⁷ Id. at 221.

⁸ See VirnetX, 767 F.3d at 1326 (A reasonable royalty ... often is... a running payment that varies with the number of infringing units. In that event, it generally has two prongs: a royalty base and a royalty rate.").

⁹ Georgia-Pacific Factor 1 is the "royalties received by the patentee for the licensing of the patent in suit." Georgia-Pac. Corp. v. U.S. Plywood Corp., 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970); see also LaserDynamics, 694 F.3d at 79 ("Actual licenses to the patented technology are highly probative as to what constitutes a reasonable royalty for those patent rights because such actual licenses most clearly reflect the economic value of the patented technology in the marketplace.").

VirnetX is a good example of this type of conduct. The case concerned a patent for "secure communications links" employed in Apple's FaceTime service offered in its iOS devices, such as iPhones and iPads. 767 F.3d at 1314. The plaintiff discerned a 1% royalty rate, based upon prior licensing, and then applied the 1% royalty rate to the sales price of Apple's iOS devices. *Id.* at 1325. The court rejected the plaintiff's use of the iOS devices, which ranged in value from \$199 to \$649, observing that FaceTime was separately available for \$29 and was a more appropriate starting point. *Id.* at 1328-29.

¹¹ The EMVR "allows for the recovery of damages based on the value of an entire apparatus containing several features, when the feature patented constitutes the basis for customer demand." *LaserDynamics*, 694 F.3d at 67 (quoting *Lucent Techs., Inc., v. Gateway, Inc.*, 580 F.3d 1301, 1336 (Fed. Cir. 2009)). The SSPU principle states that, when the EMVR is not satisfied, "it is generally required that royalties be based not on the entire product, but instead on the "smallest salable patent practicing unit." *Id.* (quoting *Cornell Univ. v. Hewlett-Packard Co.*, 609 F.Supp.2d 279, 283, 287-88 (N.D.N.Y. 2009).

¹² See VirnetX, 767 F.3d at 1315 (concerning the VPN function in smartphone browsers).

¹³ See Rembrandt Soc. Media, LP v. Facebook, Inc., 22 F. Supp. 3d 585, 590 (E.D. Va. 2013) (concerning the Facebook website).

¹⁴ Commonwealth Sci., 809 F.3d at 1301 (quoting Ericsson, 773 F.3d at 1226).

¹⁵ *Id.* (quoting *Ericsson*, 773 F.3d at 1226; *VirnetX*, 767 F.3d at 1329) (citations omitted).

- ¹⁶ Id. at 1302. Apportionment focuses on "the ultimate combination of royalty base and royalty rate." *Ericsson*, 773 F.3d at 1226.
- ¹⁷ VirnetX, 767 F.3d at 1327.
- ¹⁸ See, e.g., VirnetX, 767 F.3d at 1326; Ericsson, 773 F.3d at 1226; Commonwealth Sci., 809 F.3d at 1301.
- ¹⁹ 111 U.S. 120, 121,
- ²⁰ *Id*.
- ²¹ Bosch v. Pylon, 719 F.3d 1305, 1311 (Fed. Cir. 2013).
- ²² Univ. of Pittsburgh of Commonwealth Sys. of Higher Educ. v. Varian Med. Sys., Inc., 561 F. App'x 934, 950 (Fed. Cir. 2014).
- ²³ *Lucent*, 580 F.3d at 1336 ("In the distant past, before a contemporary appreciation of the economics of infringement damages, the Supreme Court seemingly set forth rigid rules concerning the entire market value rule.").
- ²⁴ Bosch, 719 F.3d 1311. Unlike a reasonable royalty, an established royalty had to be demonstrated from evidence of actual licensing by the patent holder. See id. (quoting Rude v. Westcott, 130 U.S. 152, 165 (1889)) ("when there has been such a number of sales by a patentee of licenses ... as to establish a regular price for a license, that price may be taken as a measure of damages...").
- ²⁵ Bosch, 719 F.3d at 1311 (citing Rude,130 U.S. at 167).
- ²⁶ Id. ("This rule created some mischief because actual damages were then, as they are now, often difficult to prove.").
- ²⁷ *Id*.
- ²⁸ Id. As a precursor, in 1922, Congress amended the patent statute to allow for general damages. Id.
- ²⁹ Daubert v. Merrell Dow Pharm., Inc., 509 U.S. 579 (1993).
- ³⁰ Apple, Inc. v. Motorola, Inc., 757 F.3d 1286, 1314-15 (Fed. Cir. 2014).
- 31 Id
- 32 Commonwealth Sci., 809 F.3d at 1301.
- 33 Rembrandt Social Media v. Facebook, 651 Fed.App'x. 909, 912-13 (Fed. Cir. 2014) (quoting LaserDynamics, 694 F.3d at 67).
- ³⁴ Commonwealth Sci., 809 F.3d at 1301 (quoting Apple, 757 F.3d at 1315).
- 35 Summit 6, LLC v. Samsung Electronics Co., Ltd., 802 F.3d 1283, 1296 (Fed. Cir. 2015).
- ³⁶ *Id*.
- ³⁷ *Id*.
- 38 Fed. Trade Comm'n at 138-48.
- ³⁹ *Id.* at 138.
- ⁴⁰ *Id.* at 144.
- ⁴¹ See id. at 57 ("Ex post licensing negotiations, on the other hand, are largely driven by how the parties believe they will fare in infringement litigation, including the size of any potential damages award. Although most patent assertions conclude with license agreements or settlements, court awarded damages and injunctive relief 'provid[e] a benchmark' for these negotiations.").
- ⁴² Id. at 144-47.
- 43 Id. at 184.
- ⁴⁴ Id.
- 45 Id. at 160-61.
- ⁴⁶ Summit 6, 802 F.3d at 1296.
- ⁴⁷ On appeal, the Federal Circuit held that the district court's damage method did not violate principles of apportionment, but that the court erred in discounting the license agreement evidence relied upon by the defendants. The Federal Circuit remanded the judgment for failing to take account of the value of the incorporation of the asserted patent into an interoperability standard. *Commonwealth Sci.*, 809 F.3d at 1307.
- ⁴⁸ Commonwealth Sci. & Indus. Research Organisation v. Cisco Sys., Inc., No. 6:11-CV-343, 2014 WL 3805817, at *5 (E.D. Tex. July 23, 2014) ("Cisco and Linksys end products—that is, wireless network interface cards, routers, access points, and other wireless network devices—are ... the only marketable unit which includes a baseband, radio chip, and antenna, all of which are required to practice the asserted claims.") (parenthetical omitted).
- 49 Id.
- ⁵⁰ Commonwealth Sci., 809 F.3d at 1299.
- ⁵¹ *Id*.

- ⁵² *Id.* After a bench trial, the court relied upon evidence of other license negotiations to support a \$16,243,067 award. *Id.* at 1300.
- ⁵³ On appeal, the Federal Circuit affirmed the district court's decision to allow the plaintiff to present its damages theory at trial and its decision to deny JMOL of no damages. Summit 6, LLC v. Samsung Electronics Co., Ltd., 892 F.3d at 1299-1300.
- ⁵⁴ *Id.* at 1288.
- ⁵⁵ Id. at 1287.
- ⁵⁶ Br. Pl.-Appellee at 20-25, Summit 6, LLC v. Samsung Electronics Co., Ltd., and Samsung Telecommunications America, LLC, 892 F.3d 1283 (Fed. Cir. 2015) (No 2013-1648).
- ⁵⁷ Br. Def.-Appellants at 67, Summit 6, LLC v. Samsung Electronics Co., Ltd., and Samsung Telecommunications America, LLC, 892 F.3d 1283 (Fed. Cir. 2015) (No 2013-1648).
- ⁵⁸ Br. Pl.-Appellee at 55, Summit 6, LLC v. Samsung Electronics Co., Ltd., and Samsung Telecommunications America, LLC, 892 F.3d 1283 (Fed. Cir. 2015) (No 2013-1648).
- ⁵⁹ Br. Def.-Appellants at 67-68, Summit 6, LLC v. Samsung Electronics Co., Ltd., and Samsung Telecommunications America, LLC, 892 F.3d 1283 (Fed. Cir. 2015) (No 2013-1648).
- ⁶⁰ On appeal, the Federal Circuit affirmed the district court's decision to admit the plaintiff's license evidence over objection that it improperly reflected royalties based upon end products. *Ericsson*, 773 F.3d at 1228. Nevertheless, it remanded for failure to properly instruct the jury regarding the value of the incorporation of the asserted patents into an interoperability standard. *Id.* at 1235.
- ⁶¹ Ericsson Inc. v. D-Link Sys., Inc., No. 6:10-CV-473, 2013 WL 4046225, at *14 (E.D. Tex. Aug. 6, 2013) (end products included "routers and computers").
- ⁶² *Ericsson*, 773 F.3d at 1225 ("Ericsson did not dispute that the asserted claims are practiced entirely by the Wi-Fi chips-not by other components of the end products ...").
- ⁶³ Ericsson, 2013 WL 4046225, at *14 ("Mr. Bone derived his \$0.50 per unit royalty ..."); Br. Intervenor & Appellant at 24, Ericsson Inc. v. D-Link Sys., Inc., (No. 6:10-CV-473), 2013 WL 4046225 ("Ericsson's damages expert ... advocated royalties ... with \$.50 per unit as the target rate.").
- ⁶⁴ *Id.* at 23. (defendants' expert "used the Wi-Fi chip price (about \$2.50) as his royalty base and calculated royalties based on a conservative approximation of Ericsson's share of the many allegedly standard-essential patents contained within a Wi-Fi chip.").
- ⁶⁵ The district court denied the defendant's motion for JMOL on damages. SimpleAir, Inc. v. Google Inc., 77 F. Supp. 3d 569, 583 (E.D. Tex. 2014). On appeal, the Federal Circuit reversed finding no liability. SimpleAir, Inc. v. Sony Ericsson Mobile Commc'ns AB, No. 2015-1251, 2016 WL 1274445, at *9 (Fed. Cir. Apr. 1, 2016).
- 66 Id. at *1 (accused products included Goggle's Cloud Messenger and Cloud to Device Messenger).
- ⁶⁷ Mar. 19, 2014 Trial Transcript at 44:20-49:19, SimpleAir, Inc. v. Google Inc., 77 F.Supp.3d 569 (E.D. Tex. 2014) (No. 2:11-cv-00416-JRG).
- ⁶⁸ SimpleAir, 77 F.Supp.3d at 583 n. 1. The plaintiff also advanced a theory based upon prior settlement amounts which resulted in a \$127,000,000 royalty. *Id.*
- ⁶⁹ Mar. 19, 2014 Trial Transcript at 63:8-64:17, SimpleAir, Inc. v. Google Inc., 77 F.Supp.3d 569 (E.D. Tex. 2014) (No. 2:11-cv-00416-JRG).
- ⁷⁰ SimpleAir, 77 F.Supp.3d at 579. ("Dr. Ugone testified that the appropriate royalty would not exceed \$6 million.").
- ⁷¹ The district court denied the defendant's motion for JMOL and a new trial on damages. *Rembrandt Wireless Technologies, LP v. Samsung Electronics Co., Ltd.*, No. 2:13-cv-213, 2016 WL 362540, *9 (E.D. Tex. Jan. 29, 2016). The case is on appeal to the Federal Circuit, No. 16-1729.
- ⁷² Complaint at ¶15, Rembrandt Wireless Technologies, LP v. Samsung Electronics Co., Ltd. (No. 2:13-cv-213), 2016 WL 362540 (listing accused products); Rembrandt Wireless Technologies, LP v. Samsung Electronics Co., Ltd., No. 2:13-cv-213, 2016 WL 362540, at *3 (E.D. Tex. Jan. 29, 2016).
- ⁷³ *Id*.
- ⁷⁴ *Id*.
- ⁷⁵ Feb. 13, 2015 Trial Transcript at 79:2-83:2, Rembrandt Wireless Technologies, LP v. Samsung Electronics Co., Ltd., (No. 2:13-cv-213), 2016 WL 362540; Rembrandt, 2016 WL 362540, at *1 n.1 ("Samsung asserted at trial that, if damages were awarded, the proper amount of damages should not exceed \$500,000.").
- ⁷⁶ See FED. R. CIV. P. 26(a)(2)(D).