

The Role of the Royalty Base and the Royalty Rate in Determining Economic Damages Using Reasonable Royalties in Patent Infringement Litigation

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A damages analyst (“analyst”) may be engaged to opine on economic damages arising from cases of patent infringement. In patent infringement litigation, the analyst may estimate a reasonable royalty to measure the amount of damages to compensate the afflicted party. The analyst is tasked with navigating this process, which may include the selection of the appropriate royalty base and royalty rate. While the process can be somewhat ambiguous, judicial decisions establish precedent. Such precedent provides the analyst with a general framework to navigate the reasonable royalty process. This discussion focuses on two variables that are used to determine a reasonable royalty, namely: the royalty base and the royalty rate. In addition, this discussion summarizes the hypothetical negotiation analysis and the Georgia-Pacific factors. Finally, this discussion explores how the selection of the royalty base and the royalty rate have been interpreted by the courts through a review of two recent decisions by the U.S. Court of Appeals for the Federal Circuit.

INTRODUCTION

The U.S. Code, Title 35, Section 284, provides the standard for measuring economic damages in patent infringement cases:

Upon finding for the claimant 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, together with interest costs as fixed by the court.¹

To receive compensation for the infringement, patentees may be entitled to receive patent damage

awards in the form of (1) lost profits or (2) reasonable royalties.

While a lost profits analysis is one method for measuring the amount of damages to be awarded in patent infringement cases, lost profits is a separate analysis that is outside the scope of this discussion. Instead, this discussion focuses on measuring damages using a reasonable royalty analysis.

Section 284 notes that a reasonable royalty should be used to establish the lower bound for damages awards in patent infringement cases. Reasonable royalty damages may be identified:

1. by analyzing established royalties for the patent or
2. by ascertaining a hypothetical royalty for the patent.

When available, an established royalty generally provides the best measure of damages since it contemplates actual market-based transactions for the subject patent.

However, due to the nature of patent infringement, established royalties are often unavailable. As a result, a hypothetical royalty is commonly used as the basis to assess the damages award in a reasonable royalty analysis.

A reasonable royalty is the hypothetical amount that compensates the patentee for the infringing party's use of the patent. To contextualize this, a reasonable royalty is typically thought of as the payment that would have resulted from a hypothetical negotiation between a willing licensor and a willing licensee at or just before the point in time that the initial infringement began.²

While Section 284 states that the reasonable royalty should be sufficient to compensate for the infringement, it does not suggest a specific method to use in the estimation of the royalty.

This discussion focuses on the estimation of the reasonable royalty through the use of the royalty base and royalty rate.

Once these variables have been determined, the reasonable royalty is calculated by multiplying the selected (1) royalty base and (2) royalty rate to conclude the amount of damages attributable to the patented feature, on a per-unit basis.

ROYALTY BASE

The royalty base is the selected level of value for the accused product containing the patented feature that is used to calculate the recovery of damages. The royalty base should capture the marginal value of the patented feature itself, with respect to the value of the product embodying the patented feature.

Because the royalty base is the foundation on which the reasonable royalty calculation is built, the selection of a suitable royalty base is important in estimating a reasonable royalty.

There are two generally accepted methods to assess the value of the royalty base:

1. The entire market value rule ("EMVR") (i.e., the sales price of the entire product embodying the patent)
2. The smallest salable patent practicing unit ("SSPPU") (i.e., the sales price of the component, within a larger product, that embodies the patented feature)



As the name suggests, the EMVR calculates the recovery of damages based on the market value of the entire product. The application of the EMVR becomes complicated when the infringed patent is part of a multicomponent product (i.e., a product containing several other valuable features in addition to the patented feature).

However, the EMVR can be applied to a multicomponent product if the patent holder can demonstrate that the patented feature, alone, constitutes the basis for consumer demand.

Specifically, in order to apply the EMVR to a product, three conditions should be met:

1. The infringing feature must be the basis for consumer demand for the entire product, including the parts beyond the patented feature.
2. The infringing and noninfringing features must be sold together so that they constitute a functional unit or parts of a complete machine or single assembly of parts.
3. The infringing and noninfringing features must be analogous to a single functioning unit.³

When the accused product fails to meet any of the three conditions outlined above, the Federal Circuit has ruled that, generally, the royalty base should be based on the market value of the SSPPU.⁴

The rationale for using the SSPPU to select the royalty base is to isolate the value of the patented feature from the value of the other, unpatented features, within a multicomponent product. Selecting a more precise royalty base helps to prevent the analyst from awarding compensatory damages on the value of the unpatented features of the product.

Sometimes the SSPPU, itself, is a multicomponent product. If the SSPPU contains valuable features in



addition to the patented feature, it is necessary to further apportion the value of the patented feature within the SSPPU.

It may be difficult to discern the value of the patented and unpatented features that comprise the SSPPU, given that the units are nonsalable in nature. However, it is important to apportion the value of the SSPPU between the patented and unpatented features so as not to overstate the marginal value of the patented feature.

One possible method to apportion the value within the SSPPU is through the selection of a royalty rate.

To better understand the royalty base, let's consider the case of *Laser Dynamics, Inc. v. Quanta Computer, Inc.*,⁵ which considered the selection of the royalty base in the context of a laptop computer. The infringed patent covered a method of optical disc discrimination that enabled the optical disc drive ("ODD") to identify whether the disc inserted into the drive was a CD or a DVD. In other words, the patented feature related to the function of the ODD, which is just one of many important component functions of a laptop computer.

In the first District Court trial, the LaserDynamics, Inc. ("LaserDynamics"), expert attempted to apply the EMVR to select the royalty base. Under the EMVR, the sales price of the entire laptop would be selected as the royalty base.

However, because no evidence was presented to indicate that the ODD drove the entirety of demand for the finished laptop product, the District Court ruled that the EMVR was improperly invoked. The

ruling was confirmed by the U.S. Court of Appeals for the Federal Circuit.

On the other hand, in the second District Court trial, the SSPPU was applied to determine the royalty base. Here, the LaserDynamics expert relied on the market value of the ODD.

The market value of the ODD was based on the sales price of a replacement ODD unit. The replacement ODD unit was determined to be representative of the market value of the ODD, independent of the completed laptop unit and, therefore, a good indication of the marginal value of the patented feature. The selection of the market value of the SSPPU containing

the patented feature, the ODD, was upheld by the U.S. Court of Appeals for the Federal Circuit as an appropriate royalty base.

ROYALTY RATE

In the context of damages analysis for patent infringement, the royalty rate is the portion of the royalty base that a hypothetical licensor would receive from granting a licensee the right to use the patent. The royalty rate is typically expressed as a percentage of the royalty base.

The selection of the royalty rate can further assist the analyst in apportioning the damages between the patented and unpatented features, beyond the selection of the royalty base.

When the entire market value of the product is selected for the royalty base, the royalty rate is used to apportion the damages to the value of the patented feature. Since a patented feature rarely accounts for 100 percent of the marginal value of a product, the selection of the royalty rate is a crucial step in apportioning damages when the EMVR is used to select the royalty base.

On the other hand, when relying on the SSPPU as the royalty base, the royalty rate acts as a supplemental tool that is used to further refine the apportionment of damages to the value of the patented feature. The royalty rate can be used to further apportion the damages when the SSPPU is a multi-component product.

HYPOTHETICAL NEGOTIATION ANALYSIS AND THE *GEORGIA- PACIFIC* FACTORS

As previously mentioned, reasonable royalties may be identified by analyzing existing royalties for the subject patent. However, existing royalty agreements for the subject patent rarely exist. Because of this, damages analysts commonly rely on the hypothetical negotiation analysis to develop a reasonable royalty.

The *Georgia-Pacific* factors (the “GP” factors) provide a framework for the analyst to estimate a royalty base and a royalty rate to determine a reasonable royalty in the hypothetical negotiation analysis. During this process, the analyst considers the GP factors to determine the reasonable royalty that would arise from a hypothetical negotiation between a willing licensor and a willing licensee at the time the infringement began.

The assumptions in a hypothetical negotiation analysis are that:

1. the patent is valid and
2. the patent has been infringed.

The case of *Georgia-Pacific v. U.S. Plywood Corp.*,⁶ established a list of 15 factors, known as the GP factors, that can be used to assist in the selection of a reasonable royalty. The GP factors prompt the analyst to consider, amongst other factors, the following:

1. The existing license agreements, if any, for the infringed product or other relevant products
2. The profitability and commercial success of the infringed product
3. Whether the licensor and licensee are commercial competitors
4. The incremental benefit of the patent over previous versions
5. The portion of the profit that should be credited to the patented feature

GP factor number 15 asks the analyst to consider the royalty that would arise out of a hypothetical negotiation between a willing licensor and a willing licensee at the time the infringement began. The first 14 GP factors summarize important issues that would likely be considered during a hypothetical negotiation process.

However, the extent that each GP factor influences the royalty will vary from case to case. It is

possible that one instance of patent infringement may only warrant the application of one or two GP factors, while another instance of patent infringement warrants the use of eight or nine GP factors to support the reasonable royalty that has been concluded.

It is up to the analyst to consider the facts of the specific case and exercise their best judgement and expertise when selecting the appropriate GP factors to analyze during the hypothetical negotiation analysis.

RELATIONSHIP BETWEEN THE ROYALTY BASE AND THE ROYALTY RATE

Generally, the broader the scope of the selected royalty base (i.e., the entire market value of a multicomponent product), the lower the selected royalty rate, and vice versa. If the royalty base and the royalty rate are estimated appropriately, so as to apportion the damages between the patented and unpatented features, the royalty base and the royalty rate should be inversely related.

Let’s consider the following reasonable royalty example to demonstrate the inverse relationship between the royalty base and the royalty rate.

Let’s assume that the patented feature is part of a multicomponent product containing several other valuable features. As presented in Exhibit 1, for illustrative purposes, the appropriate royalty base could be derived using Method A, the entire market value of the product, or using Method B, a version of the SSPPU.

Regardless of the selected royalty base, the royalty rate should be adjusted accordingly to account for the marginal value of the patented feature with respect to the value of the selected royalty base. In Method B, the market value of the royalty base is \$10, whereas the royalty base in Method A is \$100.

As mentioned, the selected royalty rate should be higher in Method B than in Method A, because the marginal value of the patented feature accounts for a larger portion of the market value of the royalty base in Method B. As shown, the selected royalty rate for Method A is 3 percent and the selected royalty in Method B is 30 percent.

Let’s note that the concluded reasonable royalty, on a per-unit basis, is \$3 using both methods. Mathematically, it does not matter how the value of the patented feature is apportioned as long as the patented feature is apportioned, so as to ascribe an accurate amount of value to the patented and unpatented features within the product.

Exhibit 1
The Royalty Base and Royalty Rate Relationship

	Method A (Entire Market Value of Product)	Method B (Smallest Salable Patent Practicing Unit)
Entire Market Value of Multicomponent Product	\$100	NA
Market Value of Component with Patent Feature	NA	\$10
Value of Royalty Base	\$100	\$10
Selected Royalty Rate	3%	30%
Concluded Value of Reasonable Royalty Per-Unit Basis	\$3	\$3

The purpose of this example is simply to illustrate the relationship between the royalty base and the royalty rate and demonstrate how this relationship affects value in the reasonable royalty calculation.

In practice, however, the decision to apply the EMVR or the SSPPU will be based on each specific case. As usual, the analyst should consider the facts and circumstances of the specific case when determining the best method to apportion damages.

**POWER INTEGRATIONS, INC. v.
 FAIRCHILD SEMICONDUCTOR
 INTERNATIONAL, INC.**

In July 2018, in an appeal from the U.S. District Court for the Northern District of California, the U.S. Court of Appeals for the Federal Circuit (the “Federal Circuit Court”) overturned the use of the EMVR to determine the royalty base.

This decision illustrates the additional scrutiny that is applied when the EMVR is used to select the royalty base.

Overview of the Appeal

Power Integrations, Inc. v. Fairchild Semiconductor International, Inc.,⁷ involved a Federal Circuit Court appeal of damages awarded in the District Court ruling. The U.S. District Court for the Northern District of California found Fairchild Semiconductor International, Inc. (“Fairchild”), guilty for infringing patents owned by Power Integrations, Inc. (“Power Integrations”), that covered switching regulators and a power supply controller. The District

Court awarded damages of \$139.8 million to Power Integrations.

Fairchild appealed the use of the EMVR to determine the reasonable royalty, citing that the evidence provided was insufficient to support the use of the EMVR.

Assessing the Royalty Base

The Federal Circuit Court suggested that when conducting an apportionment analysis for multicomponent products, such as the accused products in *Power Integrations v. Fairchild*, the royalty base should be no larger than the smallest salable unit embodying the patented invention.⁸

The Power Integrations damages expert relied on the EMVR to select the royalty base for the infringed multicomponent products. When the entire market value of a multicomponent product is used as the royalty base, the analyst risks concluding a reasonable royalty that overstates the damages award by inadvertently including damages for noninfringing elements of the product.

As previously mentioned, to use the EMVR for a multicomponent product the patented feature should be the basis for consumer demand. Court precedent, as established in *LaserDynamics v. Quanta Computer*, dictates that the burden of proof falls on the patent holder to show that the patented feature is the sole factor creating consumer demand for the infringing product.⁹

Showing that a single feature provides the basis for consumer demand can be difficult to prove. In *Power Integrations v. Fairchild*, the Federal Circuit Court explained the following:

1. Only showing that consumers perceive the patented feature to be a valuable aspect of the product is not sufficient to prove that the patented feature provides the basis for demand.
2. The fact that consumers purchase the product containing the patented feature does not itself prove that the patented feature provides the basis for demand.

Consequently, if the infringing product contains other valuable features, the only way to support the use of the EMVR is to show that the other features did not influence the consumer's purchasing decision.

The Appeals Court Decision

The Federal Circuit Court ruled that the Power Integrations expert failed to provide evidence that the other features contained in the infringing products did not influence consumer demand. Since Power Integrations failed to show that the patented feature was the sole feature creating consumer demand for the accused products, they did not meet the burden of proof necessary to use the EMVR for a multicomponent product as the royalty base.

As a result, the Federal Circuit Court vacated the damages award of \$139.8 million and remanded the case for a new trial.

EXMARK MANUFACTURING CO. V. BRIGGS & STRATTON POWER PRODUCTS GROUP, LLC

In January 2018, in an appeal from the U.S. District Court for the District of Nebraska, the Federal Circuit Court affirmed the use of the EMVR for a multicomponent product, citing that apportionment for the infringed patent may still be achieved through the selection of the royalty rate.

The decision by the Federal Circuit Court to allow the use of the EMVR to select the royalty base for a multicomponent product demonstrates the potential flexibility that may be available to analysts when apportioning damages between patented and unpatented features.

Overview of the Appeal

Exmark Manufacturing Co. v. Briggs & Stratton Power Products Group, LLC,¹⁰ considered the infringement of an Exmark Manufacturing Co. ("Exmark") patent for lawn mower flow control baffles.



The District Court jury concluded that Briggs & Stratton Power Products Group, LLC ("Briggs"), infringed the Exmark patent and awarded damages of \$24,280,330.

The District Court doubled the amount of the damages award because it was determined that Briggs willfully infringed the Exmark patent.

In its appeal, Briggs contested several aspects of the District Court's judgement including (1) the selection of the value of the entire lawn mower as the royalty base and (2) the use of a 5 percent royalty rate.

Using the EMVR for a Multicomponent Product

Briggs argued that the District Court incorrectly allowed Exmark to rely on the value of the whole lawn mower as the royalty base. Instead, Exmark should have apportioned the value of the flow control baffle by selecting a smaller royalty base.

The Federal Circuit Court disagreed with the Briggs claim, citing that apportionment can be achieved through:

1. the selection of the royalty base, so as to reflect the value of the patented feature;
2. the use of a royalty rate that is adequately discounted to account for the value of the product's unpatented features; or
3. a combination of the aforementioned factors.¹¹

The Federal Circuit Court claimed that the use of the market value of the lawn mower as the royalty base was particularly appropriate in this case for the following reasons:

1. The asserted claim was directed towards the lawn mower as a whole.

2. Licensing agreements, which are often used as the basis for ascertaining a reasonable royalty rate in a hypothetical negotiation analysis, are typically structured based on the sale price of the entire commercial product.

The Federal Circuit Court added that the EMVR is particularly applicable when the patented feature does not have an established market of its own, as was the case with the subject flow control baffle.

If the selected royalty rate proportionately accounts for the value of the patented feature with respect to the base, there is nothing inherently wrong with using the entire market value of the product.¹²

Supporting the Selected Royalty Rate

When selecting the entire market value of the product as the royalty base, the damages can still be apportioned through the royalty rate. The Federal Circuit Court suggested that one possible way of selecting the appropriate royalty rate is through an analysis of the GP factors. As a general guideline, the expert should link the pertinent GP factors from the case to the selected royalty rate.¹³

While it is not required that experts be mathematically precise in their explanation, some indication of why, and to what extent, the analyzed factors affected the selection of the royalty rate should be included.

In *Exmark v. Briggs*, the Exmark expert outlined some of the advantages that the patented feature possessed over previous products, citing GP factors 9 and 10. However, the Exmark expert failed to provide an explanation that connected the advantages to the selection of the 5 percent royalty rate.

The Appeals Court Decision

In response to the Briggs contentions, the Federal Circuit Court affirmed the District Court's ruling that the use of the entire value of the lawn mower as the royalty base was admissible. However, the Federal Circuit Court overturned the District Court's ruling of the proposed 5 percent royalty rate because the expert did not link the specific evidence presented in the case with the selection of the 5 percent royalty rate.

As a result, the Federal Circuit Court vacated the damages award and remanded the case for a new trial on damages.

CONCLUSION AND SUMMARY

Due to the one-off nature of patent infringement litigation, court decisions tend to provide guidance that is specifically tailored to the case in question.

As evidenced by the Federal Circuit decision to vacate the damages in both the cases discussed herein, the estimation of a reasonable royalty in patent infringement litigation is a delicate process to navigate. This discussion provided examples for when the EMVR may, and may not, be relied on in the selection of the royalty base for a multicomponent product.

Power Integrations v. Fairchild demonstrates the additional scrutiny with which the royalty base is analyzed when the entire market value of a multicomponent product is selected as the royalty base. On the other hand, *Exmark v. Briggs* provides an example of when it is appropriate to use the entire market value of a multicomponent product as the royalty base.

Understanding when to apply the EMVR has become more important as complex technologies and multicomponent products have become increasingly prevalent.

Additionally, the *Exmark v. Briggs* decision brings attention to the complex process of apportioning infringement damages. Here the court upheld that apportionment can occur through (1) the royalty base, (2) the royalty rate, or (3) a combination of both.

As always, analysts should consider the specific facts of the case when deciding the most appropriate methodology to determine the reasonable royalty.

Notes:

1. U.S. Code, Title 35, Section 284.
2. Nancy J. Fannon and Jonathan M. Dunitz, *Calculating Economic Damages in Intellectual Property Infringement Cases*, 2nd ed. (Portland, OR: Business Valuation Resources, 2016), 480.
3. *Ibid.*, 484.
4. *Ibid.*, 483.
5. *Laser Dynamics, Inc. v. Quanta Computer, Inc.*, 694 F.3d 51 (Fed. Cir. 2012).
6. *Georgia-Pacific Corp. v. United States Plywood Corp.*, 318 F. Supp. 1116 (S.D.N.Y. 1970).
7. *Power Integrations, Inc. v. Fairchild Semiconductor International, Inc.*, 904 F.3d 965 (Fed. Cir. 2018).
8. *Id.* at 977.
9. *Id.* at 979.
10. *Exmark Manufacturing Company Inc. v. Briggs & Stratton Power Products Group, LLC*, 879 F.3d 1332 (Fed. Cir. 2018).
11. *Id.* at 1348.
12. *Id.* at 1348 and 1349.
13. *Id.* at 1350.

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