

**Nos. 18-1363, 18-1380, 18-1382, 18-1732**

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**United States Court of Appeals**

*for the*

**Federal Circuit**

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TCL COMMUNICATION TECHNOLOGY HOLDINGS LIMITED,  
TCT MOBILE LIMITED, TCT MOBILE (US) INC.

*Plaintiffs-Appellees,*

– v. –

TELEFONAKTIEBOLAGET LM ERICSSON, ERICSSON INC.

*Defendants-Appellants.*

**ON APPEAL FROM THE UNITED STATES DISTRICT COURT FOR THE CENTRAL  
DISTRICT OF CALIFORNIA No. 8:14-CV-00341-JVS-DFM (SELNA, J.)**

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ERICSSON INC., TELEFONAKTIEBOLAGET LM ERICSSON

*Plaintiffs-Appellants.*

– v. –

TCL COMMUNICATION TECHNOLOGY HOLDINGS LIMITED,  
TCT MOBILE LIMITED, TCT MOBILE (US) INC.

*Defendants-Appellees.*

**ON APPEAL FROM THE UNITED STATES DISTRICT COURT FOR THE CENTRAL  
DISTRICT OF CALIFORNIA No. 2:15-CV-02370-JVS-DFM (SELNA, J.)**

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**CORRECTED BRIEF OF AMICUS CURIAE FAIR STANDARDS  
ALLIANCE IN SUPPORT OF TCL COMMUNICATION TECHNOLOGY  
HOLDINGS LIMITED *ET AL.* IN SUPPORT OF AFFIRMANCE IN PART**

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## CERTIFICATE OF INTEREST

Counsel for *Amicus Curiae* certifies the following:

1. The full name of every party or amicus represented by me is:

Fair Standards Alliance ASBL

2. The party named above in (1) is the real party in interest.
3. The Fair Standards Alliance does not have a parent corporation, and no publicly held corporation owns 10% or more of the Fair Standards Alliance.
4. The names of all law firms and the partners or associates that appeared or are expected to appear for the *Amicus* now represented by me in this Court are:

Daniel P. Culley, David H. Herrington, Alexandra K. Theobald, Cleary Gottlieb Steen & Hamilton LLP.

5. Counsel is not aware of any case pending in this or any other court or agency that will directly affect or be directly affected by this Court's decision in the pending appeal.

Dated: November 8, 2018

By: /s/ David H. Herrington

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## **STATEMENT OF INTEREST**

*Amicus Curiae* Fair Standards Alliance (the “Alliance” or “FSA”) is a group of more than 40 companies concerned about abusive licensing practices of Standards Essential Patents (“SEPs”).<sup>1</sup> The Alliance advocates for policies that promote industry and consumer interests in preventing SEP licensing abuses. To that end, the Alliance has articulated key principles necessary to license SEPs on fair, reasonable, and non-discriminatory (“FRAND”) terms.<sup>2</sup> FSA members have extensive experience developing, patenting, and licensing standards-related technologies and SEPs, including on a FRAND basis.

The FSA’s membership is broad and diverse, including large multinational corporations and small to medium sized developing businesses. Alliance members innovate across a broad range of industries such as telecommunication, automotive, and semiconductor. FSA members own more than 300,000 patents and patent applications, including Standard Essential Patents (SEPs), and at the

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<sup>1</sup> The Alliance submits this statement on its own accord. The positions and statements in this brief do not necessarily reflect the detailed individual corporate positions of each member.

All Parties consented to the filing of this brief. No counsel for any Party to this action has participated in authoring any part of this brief, and no person other than the *Amicus Curiae* or its counsel has contributed money intended to fund the preparation and submission of this brief. See F.R.A.P. 29(a)(4)(E).

<sup>2</sup> See FSA, *Key Principles*, <http://www.fair-standards.org/key-principles/>.

same time, develop and market innovative (standards practicing) products. In 2017, FSA members had aggregate revenues of over two trillion dollars and spent more than 100 billion dollars on R&D and innovation. FSA members directly employ more than three million people.

### **PRELIMINARY STATEMENT**

The *Amicus* submits this brief to bring to the Court's attention relevant economic research and related practical implications of calculating FRAND licenses, that demonstrate why a top-down approach beginning with an aggregate royalty rate can be a reliable, useful methodology for evaluating FRAND royalties. This case is about the constraints that making a voluntary FRAND commitment imposes on a SEP licensor. Standard setting organizations often encourage or require patent owners to commit to licensing SEPs on a FRAND basis in exchange for adopting the patent owner's technology into a standard. FRAND commitments seek to ensure that a licensor's compensation is based on the value of the invention, not the additive value of the patented technology being included in a standard, or investments made by implementers of that standard.

Requiring a SEP owner to commit to FRAND royalties promotes broad adoption of a standard. Unfair, unreasonable, or discriminatory SEP licensing practices pose a significant risk to innovation, create barriers to entry for new



market players, threaten to stifle the full potential for economic growth across major industry sectors and ultimately harm consumer choice. FRAND commitments involve a reasonable tradeoff that benefits all stakeholders; because standards promote widespread adoption of a technology, SEP holders can benefit by seeking royalties from a broader base of licensees, if they wish to do so, even if the terms of such licenses are constrained by FRAND obligations.

The risk of excessive aggregate royalty burdens created by royalty stacking (i.e. the accumulation of royalties necessary to implement all essential patents needed to comply with one or more standards used in a device) is significant and must be considered in determining FRAND rates.

### **DECISION BELOW**

The European Telecommunications Standards Institute (“ETSI”) is a standard-setting organization that requires holders of patents essential to 2G, 3G, 4G, and 5G cellular technologies to declare such SEPs and license them on FRAND terms. ETSI, *Intellectual Property Rights Policy* (Nov. 29, 2017) (hereafter “ETSI IPR Policy”), Annex 6, § 6.1 & App. A. Such licenses must not be discriminatory nor seek to extract more than the fair and reasonable value of the underlying patents. ETSI IPR Policy § 9.2.1. In the case below, TCL sought (1) a declaratory judgment that Ericsson failed to offer it a license on FRAND terms,

and (2) a determination of the FRAND rates to which TCL is entitled.<sup>3</sup> The parties stipulated for purposes of trial that the patents are subject to FRAND commitments and did not litigate the underlying patent-law issues of infringement, validity, or other substantive defenses. Instead, the parties sought a determination of the royalty rate that would be consistent with Ericsson's FRAND obligations. *See* Brief for Appellants, *TCL Commc'ns Tech. Holdings LTD v. Telefonaktiebolaget LM Ericsson*, No. SACV 14-00341 JVS ("Appx") at Appx29.

In its decision, the District Court for the Central District of California applied a "top-down" methodology of calculating a royalty rate for Ericsson's portfolio by first determining the aggregate royalty for the standard and then calculating Ericsson's appropriate share of the aggregate. Appx40-43. As set forth below, *Amicus* submits that the practicalities of licensing negotiations involving SEPs support a finding that the overall royalty burden is an appropriate

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<sup>3</sup> Brief for Appellants, *TCL Commc'ns Tech. Holdings LTD v. Telefonaktiebolaget LM Ericsson*, No. SACV 14-00341 JVS at Appx35; *see also* Witness Declaration of Bénédicte Fauvarque-Cosson (Dkt. 1330) (Fauvarque-Cosson Decl.) ¶¶ 19-23; *Apple Inc. v. Qualcomm Inc.*, No. 3:17-cv-00108-GPC-MDD, 2017 WL 3966944, at \*10 (S.D. Cal. Sept. 7, 2017) (recognizing third-party beneficiary rights of mobile phone manufacturer to enforce chip maker's contractual commitments to ETSI); *Apple, Inc. v. Motorola Mobility, Inc.*, 886 F. Supp. 2d 1061, 1085 (W.D. Wis. 2012) ("As a potential user of the standards at issue and a prospective licensee of essential patents, Apple is a third party beneficiary of the agreements between Motorola and IEEE and Motorola and ETSI").

consideration in determining FRAND-compliant royalty rates.

### **ARGUMENT**

#### **A. WITHOUT (REAL) FRAND LIMITATIONS, STANDARD-SETTING WILL RESULT IN ROYALTY STACKING AND EXCESSIVE DEMANDS**

The FRAND licensing scheme is intended to avoid SEP owners capturing the value of a technology being “designed in” to a standard, otherwise known as “lock-in.” Within the framework of standard-setting organizations, companies (often competitors) jointly develop a standard and choose which technology will be included (and which technology will be left out). Left unchecked, SEP owners may seek to use lock-in to extract excessive royalties from implementers based on (1) the difficulty implementers face in designing around individual patents that are essential to a standard and (2) prior investments in creating products incorporating the standard.<sup>4</sup> When SEP owners attempt to leverage the lock-in effect to extract royalties beyond the value of their inventions, they engage in hold-up.<sup>5</sup>

One rationale for seeking FRAND commitments from SEP owners is that standardization only works if it accounts for the total cost of complying with a standard, and excessive royalty rates impair wide-spread adoption of the standard.

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<sup>4</sup> Fed. Trade Commission, *The Evolving Market Place: Aligning Patent Notice and Remedies with Competition* 28 (Mar. 2011).

<sup>5</sup> *Id.*

## **1. THE LANDSCAPE OF STANDARD ESSENTIAL PATENTS IS COMPLEX AND, ABSENT FRAND COMMITMENTS, LEADS TO ROYALTY STACKING**

FRAND commitments are necessary to prevent hold up by SEP owners, a real risk in modern devices which typically incorporate many different standardized technologies, each of which may be covered by thousands of SEPs held by hundreds of patent owners.<sup>6</sup> For example, the mobile communication sector has over 11,000 standards. Compliance with each one of those standards may require licenses to hundreds or thousands of SEPs.<sup>7</sup> Further, a complex product like a smart phone will likely implement not only mobile communications standards, but also standards related to data communication (53 standards with SEPs), digital enhanced cordless telecommunications (37 standards with SEPs) and local area networks (“LAN”) (75 standards with SEPs),<sup>8</sup> among others.<sup>9</sup>

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<sup>6</sup> See Brad Biddle *et al.*, *How Many Standards in a Laptop? (And Other Empirical Questions)*, (June 3, 2010) (finding 251 standards applied to a modern laptop computer, 75% of which were subject to licensing on RAND terms).

<sup>7</sup> Justus Baron & Tim Pohlmann, *Mapping Standards to Patents using Databases of Declared Standard-Essential Patents and Systems of Technological Classification*, at 18 (2015).

<sup>8</sup> *Id.*

<sup>9</sup> See *e.g.*, Gary J. Sullivan, *Video Coding Standards Progress Report: Joint Video Experts Team Launches the Versatile Video Coding Project*, 127 SMPTE Motion Imaging J., 94-98 (Sept. 2018) (discussing efforts to conform video coding standards used to compress video files).

Moreover, the technologies used in most royalty-bearing essential standards were developed by multiple participants distributed across the globe. For example, more than 180 patent holders have declared SEPs related to the IEEE 802.11 standard for wireless network (i.e. Wi-Fi) connectivity.<sup>10</sup> The declared patents are held by companies based in Europe, the U.S., Canada, China, Korea, and Japan.<sup>11</sup>

The number of patents claimed by each individual patent owner can likewise be quite large. A 2016 report by the European Commission found the top five SEP holders for wireless communication and transmission standards each hold over a thousand declared SEP families.<sup>12</sup>

Taken together, the result of this complex SEP landscape is that market participants face a high number of licensing demands and negotiations for every product. Implementers of any single standard must pay royalties to many different SEP owners, creating an aggregate royalty to implement all essential patents (the

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<sup>10</sup> IEEE Standards Association, *IEEE-SA Records of IEEE Standards-Related Patent Letters of Assurance*, <https://standards.ieee.org/about/sasb/patcom/patents.html>; see also Alexander Galetovic & Kirti Gupta, *Royalty Stacking and Standard Essential Patents: Theory and Evidence from the World Mobile Wireless Industry*, (Feb. 13, 2017) (finding that the number of SEP holders for 3G and 4G standards grew from 2 in 1994 to 130 in 2013 while the number of declared SEPs rose from fewer than 150 in 1994 to more than 150,000 in 2013).

<sup>11</sup> *Id.*

<sup>12</sup> Tim Pohlmann & Knut Blind, *Landscaping Study on Standard Essential Patents (SEPs)*, IPlytics GmbH: Technical U. of Berlin, 17 (2016).

“royalty stack”) that is so large it can discourage adoption of the standard and development of further innovations by implementers, thus harming manufacturers, consumers, and other SEP holders. This means that the FRAND rate for an individual SEP or portfolio of SEPs should not be determined in a vacuum without consideration of the royalty stack—both the stack created by patents that have already been asserted and the future stack that may result when other SEP licensors seek to assert patents they own or come to own in the future. Failing to consider the size of the aggregate royalty burden would create a “race to the courthouse,” as each SEP licensor sought to assert its own SEPs before other SEP licensors, for fear that later asserters would be disadvantaged by the number of previous assertions and the amount of royalties claimed by previous asserters.

## **2. PATENT-HOLDERS ACTING INDEPENDENTLY WILL DEMAND EXCESSIVE ROYALTY RATES AS THE RESULT OF A COURNOT COMPLEMENTS PROBLEM**

Without an upper bound on FRAND royalties, SEP owners will seek to maximize their licensing royalties without regard to the overall royalty stack, creating a widely-recognized form of market failure known as the Cournot Complements problem.<sup>13</sup> Multiple sellers of complementary goods seeking to

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<sup>13</sup> See Antoine Augustin Cournot, *Researches into the Mathematical Principles of the Theory of Wealth* (Nathaniel T. Bacon trans., MacMillan & Co. 1838) (showing that consumers are better off when complementary products are

maximize their individual profits set prices that are too high, thereby reducing aggregate demand to below what would prevail if the sellers coordinated pricing decisions. Imagine separate stands selling hamburgers and fries. Because the products are complements (consumers generally want both together), raising the price of hamburgers will decrease demand for fries, and vice versa. In isolation, each stand fails to consider that raising its own prices will suppress the other stand's sales. By contrast, if the hamburger stand and fry stand owners could coordinate their prices, they could both maximize sales and revenues, and increase their profits, while still providing lower prices to consumers.

The Cournot complements problem applies to holders of SEPs that cover complementary technologies. Acting independently, each patent owner attempts to extract royalties for their own patents without considering the loss of revenue imposed on others. Each incrementally higher licensing fee negotiated by patent owners drives up the total royalty burden—a cost the licensees pass on to consumers. Total sales of standards-compliant products, and therefore total royalty

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produced by a single firm); *see also* Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 Tex. L. Rev. 1991, 2013-2016 (June 2007) (discussing the Cournot complements problem and finding that “royalty stacking causes harm based on reduced output, higher prices, and thus deadweight loss”); Thomas F. Cotter, *Patent Holdup, Patent Remedies, and Antitrust Responses*, 34 J. of Corp. L. 101, 119 (Dec. 10, 2008) (“[S]eparate owners of complementary inputs each demand[ing] what is (for them) the individually profit-maximizing price . . . will result in a price for the end product that is higher than the social optimum.”).

revenues received by all SEP holders, decline. Each patent holder's proportional share of royalties may remain the same, but the royalty rate is applied to fewer sales. Because individual SEP owners generally do not consider this externality, they end up setting higher royalty rates than a single owner of all SEPs would.

**B. CONSIDERING THE AGGREGATE ROYALTY BURDEN IN DETERMINING FRAND RATES MAXIMIZES IMPLEMENTATION OF THE STANDARD**

The best way to address the problem identified by Cournot,<sup>14</sup> that efforts by numerous sellers of complements to maximize income will lead to sub-optimal pricing, is to begin the determination of FRAND rates by calculating an appropriate aggregate royalty burden for the standard. The aggregate royalty burden should reflect the total economic value of all the patented inventions underlying a standard,<sup>15</sup> and should not be so high as to inhibit uptake of the technology. For example, the royalty stack for today's cellular technology would

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<sup>14</sup> This Court has authority to consider such externalities because of the procedural posture of this claim. Plaintiffs-Appellees state a claim as third-party beneficiaries of Ericsson's contractual commitment to ETSI to license the technology on a FRAND basis. Appx35. Potential licensors and licensees of related technologies are likewise third-party beneficiaries of the same contract, and thus interpretation of the FRAND commitment should include consideration of the broader market effects.

<sup>15</sup> There can be numerous ways to determine the aggregate royalty burden, depending on the evidence available and presented by the Parties.



include the economic value of all the SEPs underlying 2G, 3G, 4G, and 5G technology (to the extent a given device implements such standard). This addresses the Cournot complements problem by internalizing the effects a royalty rate on one set of SEPs has on revenues of other patent holders.

An aggregate royalty burden that is greater than the economic value of the underlying SEPs does not promote innovation, does not maximize adoption of a standard, and is not consistent with the FRAND commitment. Owners of SEPs should not be permitted to leverage their contributions to a standard to obtain more than the fair value of their inventions—particularly as this will impact innovation both in development of the standard and in development of products implementing the standard.<sup>16</sup> This drag on innovation is an important consideration when determining a FRAND royalty rate: products that implement a standard typically reflect significant investment by implementers (and, for component makers that implement standards, their customers) into the creation of innovative,

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<sup>16</sup> Compensation for past innovation can be a barrier to entry for potential new innovators. Academic research on the Cournot effect has found that new market entrants tend to invest more in innovation, but this trend is tempered by the cost of conforming to existing technology. *See e.g.*, Andrzej Baniak & Igor Dubina, *Innovation analysis and game theory: A review*, *Innovation: Management, Policy & Practice* 14, 178 (Dec. 17, 2014) (“[W]hen a potential innovator chooses the optimal level of R&D investment taking into account its future post-innovation payoff, an outsider always invests more than an incumbent firm, and also has higher incentives to innovate.”).

differentiated product features that extend far beyond the standard. For example, although virtually every smartphone today complies with the fourth generation wireless LTE standard, each model contains many differentiating features resulting from the investment of billions of dollars in research and development distinct from any standard setting process.

Once a FRAND commitment is established, the aggregate royalty burden of a given standard is a starting point for using the top-down methodology of setting a FRAND rate for a patent or portfolio that represents some portion of all patents essential to that standard. This helps guard against overpricing of standardized technologies and products that incorporate those standards. It also increases collective revenues for patent holders through broad adoption of the standard.

Moreover, starting with the aggregate royalty burden when applying the top-down methodology can serve as a check on the over-compensation that can result from evaluating small groups of SEPs in isolation. For example, one recent analysis found that when five different U.S. district courts calculated royalties for thirty-five SEPs covering Wi-Fi standards, the aggregate royalty burden was approximately 4.5% of the total sale price of a typical \$50 Wi-Fi router.<sup>17</sup> That

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<sup>17</sup> Jorge L. Contreras *et al.*, *Patent Remedies And Complex Products: Toward A Global Consensus, The Effect of FRAND Commitments on Patent Remedies*, forthcoming Cambridge U. Press 285, 304-05 (2018).

figure would, of course, be much higher if expressed as a percentage of the Wi-Fi chip, which at least one court has held to be the Smallest Salable Patent Practicing Unit (“SSPPU”) that implements the IEEE 802.11 wireless networking standard.<sup>18</sup> The study authors concluded that because there are approximately 3,000 patents covering the Wi-Fi standard, if the royalty for each of these patents were to be calculated “in a similarly uncoordinated, bottom-up manner, the aggregate patent royalty on a Wi-Fi router could easily surpass the product’s total selling price by an order of magnitude or more.” *Id.* Would the Wi-Fi standard have become as ubiquitous if a home wireless router cost \$500 rather than \$50?

To avoid such egregious outcomes, the top-down approach that begins with an aggregate royalty should be considered one reliable methodology for valuation of a FRAND portfolio, and indeed, a necessary limitation to potential royalty burdens.

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<sup>18</sup> See *In re Innovatio IP Ventures, LLC Patent Litig.*, No. 11 C 09308, 2013 WL 5593609, at \*14 (N.D. Ill. Oct. 3, 2013); see also *Ericsson, Inc. v. D-Link Sys., Inc.*, 773 F.3d 1201, 1227 (Fed. Cir. 2014) (“[C]ourts must insist on a more realistic starting point for the royalty calculations by juries—often, the smallest salable unit and, at times, even less.”); *VirnetX, Inc. v. Cisco Sys., Inc.*, 767 F.3d 1308, 1327-28 (Fed. Cir. 2014) (patent damages should be based on “the smallest salable infringing unit with close relation to the claimed invention.”) (citation omitted); *LaserDynamics, Inc. v. Quanta Comput., Inc.*, 694 F.3d 51, 67 (Fed. Cir. 2012) (acknowledging that “it is generally required that royalties be based not on the entire product, but instead on the ‘smallest salable patent-practicing unit.’”) (citation omitted).

**C. THE DISTRICT COURT DID NOT DETERMINE  
THE APPROPRIATE AGGREGATE ROYALTY  
BECAUSE OF THE STIPULATIONS OF THE PARTIES**

In the case below, the Parties stipulated to use the sales price of a handset as the royalty base, and accordingly, the District Court—under its declaratory judgment jurisdiction—had no ability to apply U.S. law regarding apportionment. Appx95. For SEPs, like other patents, the royalty “must be apportioned to the value of the patented invention,” not based on the Entire Market Value of the downstream invention as stipulated to here. *Commonwealth Sci. and Indus. Research Org. v. Cisco Sys. Inc.*, 809 F.3d 1295, 1304 (Fed. Cir. 2015) (citing *Ericsson, Inc. v. D-Link Sys., Inc.*, 773 F.3d 1201, 1232 (Fed. Cir. 2014)).

As this Court held in *LaserDynamics*:

Where small elements of multi-component products are accused of infringement, calculating a royalty on the entire product carries a considerable risk that the patentee will be improperly compensated for non-infringing components of that product.

694 F.3d 51, 67 (Fed. Cir. 2012). Using the price of the end product as the royalty base, as the parties agreed to do here, would make no sense if applied broadly in the context of complex technical standards incorporated into many different types of products, from low-end smartphones to high-end automobiles.

The smallest saleable patent practicing unit would have been an appropriate starting point for determining the aggregate royalty for cellular standards. Courts

have previously identified the cellular baseband processor as the SSPPU for cellular SEPs. *See e.g., GPNE Corp. v. Apple, Inc.*, No. 12 cv 02885 (LHK), 2014 WL 1494247, at \*10-13 (N.D. Cal. Apr. 16, 2014) (using the baseband processor as the royalty base for an alleged cellular SEP, noting that a cursory recitation to the entire device in the asserted claim “does not foreclose the component that directly implements the invention from being the smallest salable patent-practicing unit for reasonable royalty purposes”); *cf. Innovatio IP Ventures, LLC Patent Litig.*, No. 11 C 09308, 2013 WL 5593609, at \*3 (N.D. Ill. Oct. 3, 2013) (using the Wi-Fi chip as the royalty base for alleged Wi-Fi SEPs); *see also* authorities cited in note 18 *supra*.

While we encourage the Court to hold that the top-down approach to calculating FRAND royalties using the aggregate royalty as a starting point is a reliable method for valuing the FRAND portfolio in this case, it is important to recognize that details in how that approach is implemented may vary depending on the evidence presented by the parties. Using an end product as the base to which the determined royalty rate is applied should not be considered an accepted feature of the top-down methodology simply because the parties agreed to that base here. On the contrary, as explained above, the appropriate starting point to be used in a top down determination of a FRAND royalty would normally be the SSPPU.

**CONCLUSION**

For the reasons set forth above, *Amicus* respectfully submits that the methodology applied by the District Court considering the overall royalty burden in assessing the FRAND rate was appropriate.

Date: November 8, 2018  
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Respectfully submitted,

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## CERTIFICATE OF SERVICE

I hereby certify that on November 28, 2018, I electronically filed the foregoing corrected brief and all attachments with the Clerk of Court of the United States Court of Appeals for the Federal Circuit through the appellate CM/ECF filing system.

November 28, 2018

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Typeface Requirements and Type Style Requirements

1. This brief complies with the type-volume limitation of Fed. R. App. P. 29(a)(5) and 32(a)(7)(A) because the main body of the brief does not exceed 15 pages, excluding the parts of the brief exempted by Fed. R. App. P. 32(f).
2. This brief complies with the typeface requirements of Fed. R. App. P. 32(a)(5) and the type style requirements of Fed. R. App. P. 32(a)(6) because this brief has been prepared in a proportionally spaced typeface using Microsoft Word 2010 for Windows with Times New Roman font size 14.

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