

APEX STANDARDS

Wi-Fi 6/6E Innovation: Economic Analysis of IEEE 802.11ax Licensing

Wi-Fi 6, designated under the IEEE 802.11ax standard, marks a transformative era in wireless technology. This advancement is not just technical but also encompasses multifaceted market dynamics, product positioning, legal frameworks, and technical standardization contributions. The Wi-Fi 6 landscape is a hotbed for economic activity, with significant emphasis on patent licensing, royalty rate calculations, and strategic balancing between licensors and licensees.

The RAND (Reasonable And Non-Discriminatory) royalty rates for Wi-Fi 6 Standard Essential Patents (SEPs) are determined through a meticulous analysis conducted by Apex Standards' team of economists and technical experts. These rates are calculated within a range of \$0.19 to \$0.79 for high-confidence Wi-Fi 6 SEPs, where the confidence threshold for essentiality is ≥ 0.9 . For SEPs with reasonable confidence, featuring an essentiality threshold ≥ 0.7 , the rates range from \$0.09 to \$1.83.

This valuation is derived from a comprehensive study that factors in various elements such as relevant court cases, patent pools offerings, public licenses, as well as, the detailed construction of both the patent landscape and the IEEE 802.11ax (TGax) contribution landscape. As outlined in the table to the right, the methodologies employed in this study provide diverse perspectives on SEP valuation. Each method's implications are structured to reflect its unique impact on licensors and licensees, offering a multi-dimensional view of the economic landscape for Wi-Fi 6 SEPs.

In the Wi-Fi 6 domain, key players like Huawei, Qualcomm, and Ericsson significantly influence technology standardization and development through their shares in the patent pool. Huawei, with a substantial SEP share, holds a strong market position. The rise of patent pools, managed by groups like Sisvel, introduces a collective licensing approach, balancing fair compensation with the challenges of widespread technology adoption.

The financial implications of Wi-Fi 6 patents are substantial. Huawei's assertive enforcement, exemplified by injunctions against Netgear in Germany, underscores the financial risks in the global market. Additionally, Caltech's \$1.1 billion verdict against Apple and Broadcom over Wi-Fi patents highlights the high stakes in this domain.

Licensing dynamics in Wi-Fi 6 are complex, with significant value and financial implications, as seen in the transfer of patents from Newracom to Atlas Global. Key metrics like stack rate, portfolio rate, and SEP share are crucial for business strategies in this sector.

Royalty calculation methods cater to varied interests of licensors and licensees. Licensors may prefer the Market-Based approach for higher rates, while licensees may choose the Incremental-Value method, ensuring payment aligns with the specific value of the patented technology. The selection generally depends on patent characteristics, market dynamics, and negotiation power. In Wi-Fi, licensors with SEPs tend to favor top-down approaches, whereas licensees lean towards bottom-up methods for accurate value assessment.

In the complex world of Wi-Fi 6/6E patents, an accurate and defensible landscaping tool is not just an asset, but a necessity. It ensures a well-rounded perspective, solidifies credibility, and is instrumental in maximizing negotiation outcomes, navigating through the maze of complex economic factors that dictate the pace of innovation and market competition.

Calculation Method	Approach	Royalty Stake	Portfolio Rate	SEP Share	Impact on Licensors	Impact on Licensees	Licensee Counter-Offer Strategies	Favor	Remark
Comparable License	Top-Down	Based on comparable market licenses (\$0.53) (\$0.72)	Negotiated based on market rates for similar portfolios	Not directly related	Stable income based on market standards	Predictability of costs based on existing licenses	Use market rate evidence to negotiate lower rates.	Depends	Dependent on the availability of comparable licenses
	Market-Based Approach	Based on the total available market value (\$0.39) (\$0.47)	Aligned with market value for similar technology bundles	Reflects the market adoption of the standard	Maximizes revenue potential based on market size	May face high costs if market size is large	Argue for a lower rate based on broader market size consideration	Depends	May not reflect the intrinsic value of individual patents
Alternative Offer Bargain	Other	Varies based on alternative offers	Negotiated with respect to alternative offers	Not directly related	Potential for higher rates if alternatives are less favorable	Risk of overpayment if alternatives are not thoroughly explored	Present alternative licensing options; leverage competitive rates.	Depends	Subject to negotiation skills and alternatives available
Relief-from-Royalty Method	Other	Based on the cost savings from not having to pay royalties	Negotiated based on hypothetical royalty savings	Depends on the extent to which SEPs avoid royalty payments	Provides a royalty rate without actual licensing	Avoids actual royalty payments, but hypothetical	Offer a lump sum payment in lieu of ongoing royalties.	Depends	Hypothetical and may not reflect actual market rates
	25% Rule	Other	25% of the licensee's expected profits for the product (\$0.65) (\$0.69)	Fixed percentage of profits irrespective of the number of patents	Not directly related	Simple calculation but potentially overestimates value	May overpay regardless of actual patent contribution	Licensor	May not align with FRAND obligations for SEPs
Georgia-Pacific Factors	Other	Based on 15 factors including profitability and exclusivity (\$0.47) (\$0.41)	Varies widely based on negotiation and contextual factors	Can be influenced by the SEP's role in maintaining exclusivity	Comprehensive but complex assessment of value	Allows for nuanced negotiation but may result in high costs	Leverage the full set of factors to argue for lower rates.	Depends	Complex and may be subject to litigation
	Profit Split Method	Other	Division of profits proportional to the contribution of the patented technology (\$0.34) (\$0.15)	Based on the portfolio's profit contribution	Proportional to SEP's contribution to profits	Ensures fair profit distribution	Propose an alternative division of profits reflecting actual tech contributions.	Depends	Requires transparent disclosure of financials
Income-Based Approach	Income-Based	Based on the income attributable to the patent (\$0.21) (\$0.09)	Aligned with income produced by the portfolio	Reflects the income attributable to SEPs in the portfolio	Aligns income with the economic benefit provided by patents	Costs are proportional to the financial benefit received	Link payments to actual profits derived from patented tech.	Depends	Assumes accurate income attribution, which can be complex
	Cost-Based Approach	Cost-Based	Based on the cost of developing equivalent technology (\$0.19) (\$0.14)	Reflects the cost of assembling a similar portfolio	Not directly related	Ensures recovery of development costs	Negotiate based on development and production costs.	Licensee	Does not account for market factors
Reverse Apportionment	Bottom-Up	Subtraction of non-patented contributions from total product value (\$0.79) (\$1.83)	Reflects the intrinsic value of patented technology within the portfolio	Can be high if patented technology is a significant part of the product	Can capture full value of essential technology	May overpay if not all patented features are essential	Dispute the essentiality of patents to reduce rates.	Licensor	Requires careful assessment of the product's components
	Incremental Value Method	Bottom-Up	Based on the added value the patented technology provides over the next best alternative (\$0.35) (\$0.28)	Reflects the incremental value of the portfolio over alternatives	High if the SEP adds significant incremental value	Rewards innovation that significantly advances the technology	Only pays for the actual added value of the technology	Licensee	Rewards significant technological contributions

Royalty rates, marked in **(red)**, are based on SEPs with high essentiality confidence (≥ 0.9), while the **(orange)** figures based on SEPs with reasonable essentiality confidence (≥ 0.7). Lowering the threshold for SEP inclusion results in more patents and patent holders, influencing royalty calculations. In top-down approaches, this can lead to a higher royalty stack and elevated licensing costs. Conversely, bottom-up approaches might experience diluted value per patent due to the expanded pool of holders. Therefore, selecting suitable methods and thresholds is vital for balancing fair compensation and fostering innovation, without overwhelming the market with excessive fees.

Apex Standards: Charting the Patent Landscape to Inform Multi-Perspective Economic and Valuation Analysis

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At Apex Standards, we excel in multi-perspective economic analyses for high-tech industries including 3GPP, IEEE, IETF, JEDEC, Codec, and Banking. Our patent landscaping expertise includes market research, essentiality modeling, threshold selection, sampling strategies, subject matter analysis, and detailed claim charting. This boosts the success of patent licensing negotiations, via facilitating credible offers, defensible counter-offers, or iterative cross-licensing discussions. Our services enhance clients' credibility and negotiation power, providing in-depth, data-backed insights for effective licensing agreements. Partnering with us ensures a well-informed, precise journey through the patent licensing landscape.

References

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