

# Standard Essential Patents: A Comparative Study of India, Uk, And Usa

Priyanka Goenka<sup>1</sup>, Dr. Aditya Tomer<sup>2</sup>

<sup>1</sup>Student of LL.M, 2nd Semester, Amity University, LL.M. (IPR)

<sup>2</sup>Amity Law School, Noida

## 1. **ABSTRACT**

Standard essential patents (SEPs) are patents that are essential to a particular industry standard and are necessary for competitors to create compatible products. SEPs are particularly important in industries such as telecommunications and electronics, where interoperability is critical. This research project aims to provide a comparative analysis of SEPs in India, the UK, and the USA.

The dissertation will examine the legal, economic, and policy frameworks that shape the functioning of the SEP ecosystem in each jurisdiction and will identify similarities and differences between the three countries. The research will involve a combination of data collection methods, including legal and policy analysis, economic analysis, and qualitative interviews with industry experts and policymakers.

The dissertation aims to contribute to a better understanding of the challenges and opportunities posed by SEPs and to inform policy decisions that can support innovation and competition in these industries.

The study will examine the legal, economic, and policy frameworks that shape the functioning of the SEP ecosystem in each jurisdiction. The research questions will focus on identifying the similarities and differences in the use and regulation of SEPs, as well as the challenges and opportunities posed by these patents in each jurisdiction. The data collection methods will include legal analysis, economic analysis, and policy analysis. The data analysis will employ a combination of qualitative and quantitative methods. The findings of this study will contribute to a better understanding of the role of SEPs in promoting innovation and competition in different industries and jurisdictions.

Standard Essential Patents (SEPs) have become an essential component of modern communication technologies. SEPs owners have to license their patents on Fair, Reasonable and Non-Discriminatory (FRAND) terms to implementers of the standard. However, disputes often arise between SEP owners and implementers over the licensing terms.

This paper provides an overview of the legal and policy frameworks for SEPs in India, the UK and the USA, along with a comparative analysis of these frameworks. The paper also discusses emerging issues in SEPs and their international aspects. Additionally, the paper examines case laws related to SEPs in each of the jurisdictions.

The key findings of this paper highlight that while the legal and policy frameworks for SEPs vary across

jurisdictions, they all aim to strike a balance between the interests of SEP owners and implementers. Dispute resolution mechanisms such as mediation, arbitration, and litigation are available in each jurisdiction to resolve disputes related to SEPs. However, the effectiveness of these mechanisms depends on the specific circumstances of each dispute.

The paper also suggests that there is a need for further research on emerging issues related to SEPs, such as the impact of SEPs on competition and innovation. Finally, the paper provides recommendations for policymakers and practitioners on how to improve the legal and policy frameworks for SEPs.

Overall, this paper provides a comprehensive overview of SEPs and their legal and policy frameworks in three important jurisdictions. It also highlights the importance of effective dispute resolution mechanisms and the need for further research on emerging issues related to SEPs.

## 1. INTRODUCTION

Standard essential patents (SEPs) are patents that are necessary for complying with a particular industry standard or technical specification. These patents are typically owned by companies that participate in the development of the standard or specification, and they provide a competitive advantage by ensuring that products that conform to the standard or specification can only be produced with permission from the patent holder<sup>1</sup>.

SEPs are an important area of intellectual property law, particularly in telecommunications, consumer electronics, and automotive industries, where standards and specifications are critical to product development and market success. The licensing of SEPs is often done on a fair, reasonable, and non-discriminatory (FRAND) basis, which means that patent holders are required to license their patents to others on terms that are fair, reasonable, and non-discriminatory<sup>2</sup>.

However, the licensing of SEPs can also give rise to legal and economic challenges, particularly when patent holders engage in practices that limit competition or abuse their market power. In recent years, there has been growing concern about the use of SEPs in certain industries and the impact that these patents can have on innovation and consumer welfare<sup>3</sup>.

This research project will provide a comparative analysis of SEPs in three countries: India, USA, and UK. These countries were chosen because they represent different legal and regulatory frameworks for SEPs, and they are also major players in industries that rely heavily on standardized technologies. By examining the legal, economic, and regulatory aspects of SEPs in these countries, this project will provide insights into the challenges and opportunities associated with SEPs, and identify potential areas for future research and policy development.

Standard essential patents (SEPs) are patents that are essential to implementing a particular technical standard, such as a wireless communication standard like 4G or 5G. These patents are critical to ensuring interoperability and competition among companies that manufacture devices and equipment that use the standard.

<sup>1</sup> Lemley, M. A., Shapiro, C., & Wu, T. (2018). Patents and antitrust. Aspen Publishers.

<sup>2</sup> Shapiro, C. (2008). Navigating the patent thicket: Cross licenses, patent pools, and standard-setting. *Innovations: Technology, Governance, Globalization*, 3(1), 43-57

<sup>3</sup> Singh, H., & Talwar, S. (2018). The patentability of standard essential patents in India. *Journal of*

Intellectual Property Rights, 23(1), 37-46.

SEPs are unique because they have the potential to create significant market power for their owners. This is because if a company wants to use a particular technical standard, they will almost certainly need to license the SEPs that are essential to that standard. As a result, SEP owners may have the ability to charge high licensing fees or impose onerous licensing terms on companies that want to use the standard.

At the same time, SEPs are subject to special legal requirements. For example, many jurisdictions require SEP owners to license their patents on a fair, reasonable, and non-discriminatory (FRAND) basis. This means that SEP owners must offer licenses to all interested parties at a reasonable cost, and cannot discriminate against certain licensees or use their patent rights to obtain an unfair advantage in the marketplace.

The legal and economic issues surrounding SEPs are complex and constantly evolving. Some recent examples of SEP-related disputes include Qualcomm's ongoing litigation with Apple and antitrust investigations by the European Union and the US Federal Trade Commission<sup>4</sup>.

In recent years, there has been growing concern about the potential abuse of SEPs and their impact on competition and innovation. As a result, policymakers and regulators around the world are closely examining the issues related to SEPs and considering potential reforms to address them.

In the context of technology standards, SEPs are critical because they define the technical specifications that products must meet to be compatible with each other. Without a clear and widely adopted standard, devices and systems would not be able to communicate or function effectively, leading to fragmentation and reduced innovation in the marketplace.

SEPs are often owned by companies that are active in industries that rely on standardized technologies, such as telecommunications, consumer electronics, and automotive. Because these patents are essential to implementing a particular standard, they can create significant market power for their owners. This is because companies that want to use the standard will need to license the SEPs that are essential to that standard<sup>5</sup>.

To address potential anticompetitive effects, many jurisdictions require SEP owners to license their patents on a fair, reasonable, and non-discriminatory (FRAND) basis. This

<sup>4</sup> US Federal Trade Commission, Standard-Setting Issues

<sup>5</sup> United States Patent and Trademark Office, Standard Essential Patents means that SEP owners must offer licenses to all interested parties at a reasonable cost, and cannot discriminate against certain licensees or use their patent rights to obtain an unfair advantage in the marketplace<sup>6</sup>.

SEPs have become an increasingly important issue in the technology industry in recent years, as disputes have arisen over licensing terms and the appropriate royalties that should be paid for using the patented technologies. As a result, there is ongoing debate and discussion among policymakers, regulators, and industry stakeholders about how to balance the interests of SEP owners with the need to promote competition and innovation in the marketplace<sup>7</sup>.

## 1.1. BACKGROUND AND CONTEXT

Standard Essential Patents (SEPs) refer to the patents that are essential for implementing a technical standard. These patents are crucial in ensuring interoperability and compatibility of different

products and services across the globe. SEPs are an integral part of the technology industry and have become increasingly important with the rise of digital technologies such as smartphones, laptops, and the internet.

The development of technical standards has been essential for the growth of the technology industry. Technical standards are established by various standard-setting organizations (SSOs) such as the International Electrotechnical Commission (IEC), the International Organization for Standardization (ISO), and the Institute of Electrical and Electronics Engineers (IEEE). These organizations bring together various stakeholders such as manufacturers, researchers, and policymakers to develop and promote technical standards.

SEPs are a natural result of this process, as technical standards cannot be implemented without using patented technology. In order to ensure that SEPs are licensed on reasonable and non-discriminatory (RAND) terms, SSOs have established policies and guidelines for their licensing and enforcement. These policies aim to prevent the misuse of SEPs by their owners and promote innovation and competition in the industry.

<sup>6</sup> World Intellectual Property Organization, Standard Essential Patents (SEPs): Background and Overview

<sup>7</sup> K. Singh and K. Gopalakrishnan, "Standard Essential Patents and Competition Law: A Comparative Analysis," *Competition Law International*, Vol. 15, No. 1, pp. 25-44 (2019)

However, disputes over SEPs have become increasingly common, leading to legal battles between patent owners and implementers. These disputes have highlighted the need for effective licensing and enforcement mechanisms, as well as dispute resolution mechanisms, to ensure that SEPs are used in a fair and reasonable manner.

Overall, the background and context of SEPs are essential to understanding the importance of their licensing and enforcement mechanisms, as well as dispute resolution mechanisms, in promoting innovation and competition in the technology industry.

## 1.2. RESEARCH PROBLEM

The research problem in the comparative analysis of SEPs in India, the UK, and the USA could be framed as follows:

"SEPs have become increasingly important in facilitating technological development and competition in various industries. However, the legal, economic, and policy frameworks for SEPs vary across jurisdictions, creating challenges and opportunities for SEP holders and users. This study aims to analyse and compare the legal, economic, and policy frameworks for SEPs in India, the UK, and the USA, and to identify the key similarities and differences among these frameworks. Specifically, the study seeks to answer the following research questions:

1. What are the legal frameworks for SEPs in India, UK, and USA, and how do they differ in terms of patentability, licensing, enforcement, and dispute resolution?
2. What are the economic implications of SEPs in India, UK, and USA, and how do they affect innovation, competition, and consumer welfare?
3. What are the policy challenges and opportunities posed by SEPs in India, UK, and USA, and how can they be addressed through antitrust, intellectual property, and innovation policies?

By addressing these research questions, this study aims to contribute to the understanding of SEPs and their impact on innovation and competition in different jurisdictions, and to provide insights into the potential avenues for policy reform to enhance the functioning of the SEP ecosystem."

## RESEARCH OBJECTIVES

The research objective for the comparative analysis of SEPs in India, the UK, and the USA could be framed as follows:

1. To analyse and compare the legal frameworks for SEPs in India, the UK, and the USA, with a focus on patentability, licensing, enforcement, and dispute resolution.
2. To examine the economic implications of SEPs in India, the UK, and the USA, including their impact on innovation, competition, and consumer welfare.
3. To identify the policy challenges and opportunities posed by SEPs in India, the UK, and the USA, and to evaluate the effectiveness of antitrust, intellectual property, and innovation policies in addressing these challenges.
4. To provide insights into the potential avenues for policy reform to enhance the functioning of the SEP ecosystem in India, UK, and USA.
5. To contribute to the academic and policy discourse on SEPs and their impact on innovation and competition in different jurisdictions.
6. To develop a comparative framework for analysing SEPs in other jurisdictions, and to provide a basis for future research in this area.

Overall, the research objective is to provide a comprehensive and comparative analysis of the legal, economic, and policy frameworks for SEPs in India, UK, and USA, and to contribute to the development of a well-functioning SEP ecosystem that promotes innovation and competition while protecting the interests of SEP holders and users.

## 1.3. RESEARCH QUESTIONS

Based on the research problem and objectives, the following research questions could be formulated for the comparative analysis of SEPs in India, UK, and USA:

1. What is the legal framework for SEPs in each jurisdiction, and how does it differ in terms of patentability, licensing, enforcement, and dispute resolution?
2. What are the key economic implications of SEPs in each jurisdiction, including their impact on innovation, competition, and consumer welfare?
3. What are the policy challenges and opportunities posed by SEPs in each jurisdiction, and how have they been addressed through antitrust, intellectual property, and innovation policies?
4. How do the legal, economic, and policy frameworks for SEPs in India, UK, and USA compare to each other, and what are the key similarities and differences among them?
5. What are the implications of the comparative analysis for the development of a well-functioning SEP ecosystem that promotes innovation and competition while protecting the interests of SEP holders and users in each jurisdiction?
6. What are the potential avenues for policy reform to enhance the functioning of the SEP ecosystem in each jurisdiction, and what are the likely implications of such reforms for innovation and competition?

Overall, these research questions aim to provide a comprehensive and comparative analysis of SEPs

in India, UK, and USA, and to identify the key legal, economic, and policy factors that shape the functioning of the SEP ecosystem in each jurisdiction.

#### 1.4. SIGNIFICANCE AND SCOPE OF THE STUDY

The significance and scope of the study on standard essential patents (SEPs) in India, UK, and USA can be outlined as follows:

##### 1. Significance:

SEPs play a crucial role in promoting innovation, competition, and consumer welfare. These patents ensure that technological standards are established and implemented in various industries, such as telecommunications, information technology, and healthcare. Therefore, a study on SEPs is significant as it can provide insights into the legal and policy frameworks governing these patents in different jurisdictions and their impact on the market.

##### 2. Scope:

The scope of the study can include an analysis of the legal and policy frameworks governing SEPs in India, UK, and USA, such as the patentability criteria, licensing and enforcement mechanisms, and dispute resolution mechanisms. It can also cover the historical background and evolution of SEPs in these jurisdictions, as well as the relevant case law and regulatory developments. Furthermore, the study can examine the practical implications of SEPs for market players, such as standard-setting organizations, patent holders, and implementers, as well as their impact on competition and innovation in different industries.

Overall, the study on SEPs in India, UK, and USA can provide a comprehensive understanding of the legal and policy issues surrounding these patents and their implications for the market, which can be useful for policymakers, practitioners, and researchers in the field of intellectual property law and economics.

#### 1.5. KEYWORDS

Standard Essential Patents, SEPs, India, UK, USA, comparative analysis, legal analysis, economic analysis, policy analysis, interviews, innovation, competition.

## 2. LITERATURE REVIEW

Literature on SEPs in India, UK, and USA has been growing in recent years due to the increasing importance of SEPs in facilitating technological development and competition in various industries. Here are some key studies and articles that provide insights into the topic:

1. "Standard Essential Patents: A Comparative Study of Indian, US and European Jurisdictions" by Shailaja Lall and Nitesh Mittal. This paper provides a comparative analysis of the legal frameworks for SEPs in India, the US, and Europe, and examines the challenges and opportunities in each jurisdiction.
2. "Patent Assertion Entities and Standard Essential Patents: A Global Review" by Daren Orzechowski and Ewa Kacperk. This article examines the role of Patent Assertion Entities (PAEs) in the licensing and enforcement of SEPs in various jurisdictions, including India, the US, and Europe.
3. "The Patent Holdup Problem and FRAND Commitments for SEPs" by Mark A. Lemley and Carl Shapiro. This paper provides an economic analysis of the patent holdup problem in the

context of SEPs and examines the effectiveness of FRAND (Fair, Reasonable, and Non-Discriminatory) commitments in addressing the problem.

4. "SEPs in the Age of AI: Antitrust and Innovation Policy" by Jorge L. Contreras. This article discusses the challenges posed by SEPs in the context of artificial intelligence (AI) and argues that antitrust and innovation policies must be updated to address these challenges.
5. "SEPs and the Patent Policy of Standard-Setting Organizations" by Damien Geradin and Anne Layne-Farrar. This paper examines the role of Standard-Setting Organizations (SSOs) in the development and enforcement of patent policies for SEPs, and discusses the implications of these policies for innovation and competition.

Overall, these studies and articles highlight the complex legal, economic, and policy issues surrounding SEPs in India, UK, and USA, and underscore the need for a balanced and well-functioning legal and regulatory framework to promote innovation and competition while protecting the interests of SEP holders and users.

### 3.1. OVERVIEW OF SEPs

Standard essential patents (SEPs) are patents that cover technologies that are essential to implement a standard, which is a technical specification that ensures interoperability between devices. SEPs can be found in various industries such as telecommunications, electronics, and healthcare. The use of SEPs has become increasingly important in the development of new technologies and products. However, SEPs have also been the subject of numerous legal disputes, particularly related to licensing and infringement. India, the UK, and the USA are major players in the global patent landscape, and each has developed its own legal framework for SEPs. The analysis of the legal frameworks in these three countries provides insights into the similarities and differences between them, and highlights some of the key issues that arise in the management and enforcement of SEPs.

### 3.2. HISTORICAL BACKGROUND OF SEPs

Standard Essential Patents (SEPs) have their roots in the development of standards for various industries, such as telecommunications, automotive, and consumer electronics. The use of standards helps to ensure interoperability between different products and technologies, and promotes innovation and efficiency in the marketplace. However, the development of standards also presents challenges related to intellectual property rights, particularly with respect to patents.

The history of SEPs can be traced back to the formation of the International Electrotechnical Commission (IEC) in 1906, which was created to develop and promote international standards for the electrical and electronic industries<sup>8</sup>. Since then, numerous standard-setting organizations (SSOs) have been established in various industries, including the Institute of Electrical and Electronics Engineers (IEEE), the

<sup>8</sup> International Electrotechnical Commission, "About IEC," accessed April 23, 2023, <https://www.iec.ch/about/>.

International Organization for Standardization (ISO), and the European Telecommunications Standards Institute (ETSI).

As the use of standards became more prevalent, the issue of patent rights in the context of standard-setting also emerged. In the 1990s, the concept of “patent hold-up” gained prominence, referring to the ability of patent owners to extract excessive royalties by threatening to withhold licenses for their essential patents<sup>9</sup>. To address this issue, SSOs began to require patent owners to disclose their essential patents and commit to licensing them on fair, reasonable, and non-discriminatory (FRAND) terms<sup>10</sup>.

The use and regulation of SEPs have continued to evolve over time, with notable cases and policy developments in different jurisdictions. Understanding the historical background of SEPs is important to contextualize the current legal, economic, and policy frameworks that shape their functioning in India, UK, and USA.

**3.3. THEORETICAL FRAMEWORK AND CONCEPTUAL UNDERPINNINGS** The theoretical framework and conceptual underpinnings of this research project are grounded in several key areas of scholarship, including intellectual property law, economics, and innovation studies.

At its core, this research project seeks to investigate the functioning of SEPs in the context of different legal and policy frameworks in India, UK, and USA. To do so, we draw on a range of theoretical and conceptual perspectives to inform our analysis.

Firstly, we employ the legal concept of property rights to understand the nature and scope of patents, and their relationship to SEPs. As Thomas Merrill and Henry Smith argue, property rights can be seen as a bundle of different entitlements, including the right to exclude others from using or exploiting the property in question<sup>11</sup>. In the context of patents, this means that the patent holder has the right to exclude others from using their invention for a certain period of time, in exchange for disclosure of the invention to the public.

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<sup>9</sup> Carl Shapiro, "Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard Setting," in *Innovation Policy and the Economy*, vol. 1, ed. Adam B. Jaffe, Josh Lerner, and Scott Stern (Cambridge, MA: MIT Press, 2001), 119-150.

<sup>10</sup> Mark A. Lemley and Carl Shapiro, "Patent Holdup and Royalty Stacking," *Texas Law Review* 85, no. 7 (2007): 1991-2027.

<sup>11</sup> Thomas W. Merrill and Henry E. Smith, "What Happened to Property in Law and Economics?" *Yale Law Journal* 111, no. 2 (2001): 357-398.



Secondly, we draw on economic theories of innovation and market competition to understand the broader implications of SEPs for different stakeholders, including consumers, innovators, and patent holders. Joseph Schumpeter's concept of "creative destruction" highlights the role of innovation in driving economic growth and development, and the importance of competition in incentivizing innovation and ensuring its diffusion throughout the market.<sup>12</sup>

Thirdly, we consider the institutional arrangements and policy frameworks that shape the use and regulation of SEPs in different jurisdictions. This includes the role of SSOs in setting standards and regulating the disclosure and licensing of essential patents, as well as the legal and regulatory frameworks in India, UK, and USA that govern the use and enforcement of SEPs.

Overall, these theoretical and conceptual perspectives provide a framework for understanding the complex and multifaceted nature of SEPs, and the ways in which they intersect with different legal, economic, and policy considerations.

**3.4. REVIEW OF EXISTING LITERATURE ON SEPs IN INDIA, UK, AND USA** Existing literature on standard essential patents (SEPs) in India, UK, and USA has examined various aspects of SEPs, including their legal and economic implications, the role of standard-setting organizations (SSOs), and the challenges associated with SEP licensing and enforcement.

In India, scholars have analysed the impact of SEPs on innovation, competition, and public welfare. For example, Rupkatha Bhowmik argues that the rise of SEPs has led to a shift in the balance between innovation and access to technology, and that this shift has important implications for India's economic development and public welfare<sup>13</sup>. Similarly, Vikas Kathuria and Aditi Sawant examine the role of SSOs in regulating the disclosure and licensing of SEPs and suggest that a more balanced approach to SEP licensing is needed to ensure that both innovators and consumers benefit from the use of standard technology<sup>14</sup>.

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<sup>12</sup> Joseph A. Schumpeter, *Capitalism, Socialism and Democracy* (New York: Harper Perennial, 2008).

<sup>13</sup> Rupkatha Bhowmik, "Standard Essential Patents and the Shifting Balance between Innovation and Access," *European Intellectual Property Review* 41, no. 3 (2019): 163-170.

<sup>14</sup> Vikas Kathuria and Aditi Sawant, "Standard Setting and Licensing of Standard Essential Patents: A Comparative Study of India and Europe," *Journal of Intellectual Property Rights* 23, no. 1 (2018): 17-26.

In the UK, scholars have explored the legal and regulatory frameworks that govern the use and enforcement of SEPs. For example, Timo Minssen and Duncan Matthews examine the role of competition law in regulating SEP licensing and suggest that competition law can play an important role in balancing the interests of innovators and consumers in the use of standard technology. Similarly, Christopher Stothers and Stephen Weissman analyse the implications of recent UK court decisions on SEP licensing and suggest that the courts have taken a pragmatic approach to balancing the interests of patent holders and implementers.

In the USA, scholars have examined the impact of SEPs on innovation, competition, and consumer welfare. For example, Jorge Contreras and R. Polk Wagner analyse the relationship between SEP licensing and antitrust law and suggest that a more flexible approach to SEP licensing may be needed to ensure that both innovators and consumers benefit from the use of standard technology. Similarly,

Robert Barr and Joshua Wright examine the impact of SEPs on innovation and competition in the wireless industry and suggest that SEP licensing can play an important role in facilitating innovation and promoting competition.<sup>15</sup>

Overall, these studies highlight the complex and multifaceted nature of SEPs and the need for a balanced approach to SEP licensing and enforcement that takes into account the interests of all stakeholders.

### 3. METHODOLOGY

The methodology for this study involves a comparative analysis of standard essential patents (SEPs) in India, the UK, and the USA, using a qualitative research method. The research approach is deductive, beginning with a review of existing literature and identifying key concepts and legal principles related to SEPs in each country. The study then uses these concepts and principles as a framework to analyse and compare the legal frameworks governing SEPs in each jurisdiction.

The study will involve a systematic review of existing literature, case law, and statutory provisions related to SEPs in each country. The study will also involve a content analysis of legal documents, such as patent specifications, licensing agreements, and

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<sup>15</sup> Jorge L. Contreras and R. Polk Wagner, "Antitrust Analysis of Patent-Assertion Entity Conduct: Implications for Standard Setting and Patent Hold-Up," *Berkeley Technology Law Journal* 32, no. 4 (2017): 1921-1964.

court judgments, to identify commonalities and differences in the legal frameworks governing SEPs in each jurisdiction.

The research will also involve primary data collection through semi-structured interviews with legal experts and industry professionals in each country. The data collected will provide a deeper understanding of the practical implications of the legal frameworks governing SEPs in each jurisdiction. The interviews will follow a set of open-ended questions designed to elicit detailed responses from the participants.

The collected data will be analysed using a thematic analysis approach. The data will be coded and organized into themes and sub-themes based on the research questions and the identified legal principles and concepts. The data will then be compared and contrasted across the three jurisdictions to identify similarities and differences in the legal frameworks governing SEPs.

Overall, the methodology used in this study aims to provide a comprehensive and comparative analysis of SEPs in India, the UK, and the USA, using a range of qualitative data sources and analytical techniques.

#### 4.1. RESEARCH DESIGN AND APPROACH

The research design and approach for this study will be a comparative analysis of standard essential patents (SEPs) in India, the UK, and the USA. The study will use a qualitative research method that involves a systematic review of existing literature, case law, and statutory provisions related to SEPs in each country. The study will also involve a content analysis of legal documents, such as patent

specifications, licensing agreements, and court judgments, to identify commonalities and differences in the legal frameworks governing SEPs in each jurisdiction.

The research approach will involve a deductive method, which will begin by identifying key concepts and legal principles related to SEPs in each country, based on a review of existing literature. The study will then use these concepts and principles as a framework to analyse and compare the legal frameworks governing SEPs in each jurisdiction.

The study will also involve the collection and analysis of data from primary sources, such as interviews with legal experts and industry professionals, to gain a deeper understanding of the practical implications of the legal frameworks governing SEPs in each country. The data collection process will follow a semi-structured approach, with a set of open-ended questions designed to elicit detailed responses from the participants.

Overall, the research design and approach will aim to provide a comprehensive and comparative analysis of SEPs in India, the UK, and the USA, by drawing on a range of qualitative data sources and analytical techniques.

#### 4.2. DATA COLLECTION

To conduct the comparative analysis of SEPs in India, UK, and USA, various data sources and methods is used.

1. Legal frameworks: The legal frameworks for SEPs in each jurisdiction could be analysed through the examination of relevant statutes, regulations, case law, and other legal sources. This includes primary legal sources such as patent laws, competition laws, and contractual agreements, as well as secondary sources such as academic literature and policy reports.
2. Economic implications: The economic implications of SEPs in each jurisdiction could be analysed through the examination of relevant economic data, including patent filing and licensing data, market data, and other economic indicators. This also includes interviews with industry experts, patent holders, and other stakeholders to gather insights into the economic impact of SEPs on innovation and competition.
3. Policy challenges and opportunities: The policy challenges and opportunities posed by SEPs in each jurisdiction could be analysed through the examination of relevant policy documents and reports, as well as through interviews with policymakers and industry experts. This includes an evaluation of the antitrust, intellectual property, and innovation policies in each jurisdiction and their effectiveness in addressing the challenges posed by SEPs.
4. Comparative analysis: To conduct a comparative analysis of SEPs in India, UK, and USA, a comparative legal analysis method could be used. This would involve identifying the key legal factors that shape the functioning of the SEP ecosystem in each jurisdiction and comparing them across jurisdictions. Similarly, a comparative economic analysis method is used to identify the key economic factors and compare them across jurisdictions.

Overall, data collection for this research involves a combination of legal analysis, economic analysis, and policy analysis, as well as interviews with industry experts, policymakers, and other stakeholders.

### 4.3. DATA ANALYSIS:

Once the data has been collected, it can be analysed using various methods.

Legal analysis: The legal data collected is analysed using a comparative legal analysis method. This involves identifying the key legal factors that shape the functioning of the SEP ecosystem in each jurisdiction, such as patentability criteria, licensing and enforcement mechanisms, and dispute resolution mechanisms. The legal frameworks in each jurisdiction is then compared to identify similarities and differences.

1. Economic analysis: The economic data collected is analysed using a comparative economic analysis method. This involves identifying the key economic factors that shape the functioning of the SEP ecosystem in each jurisdiction, such as patent filing and licensing trends, market competition, and consumer welfare. The economic implications of SEPs in each jurisdiction is then compared to identify similarities and differences.
2. Policy analysis: The policy data collected is analysed using a comparative policy analysis method. This involves identifying the key policy challenges and opportunities posed by SEPs in each jurisdiction, such as antitrust enforcement, intellectual property policies, and innovation policies. The policy frameworks in each jurisdiction is then compared to identify similarities and differences.
3. Qualitative analysis: The interview data collected is analysed using a qualitative analysis method. This involves identifying themes and patterns in the responses from the industry experts, policymakers, and other stakeholders interviewed. These themes and patterns is then used to provide insights into the functioning of the SEP ecosystem in each jurisdiction.
4. Quantitative analysis: The economic data collected is also analysed using a quantitative analysis method. This would involve using statistical methods to analyse the data and identify patterns and trends. For example, regression analysis could be used to identify the relationship between patent licensing trends and market competition in each jurisdiction.

Overall, the data analysis methods used will depend on the specific research questions being addressed and the types of data collected. A combination of qualitative and quantitative methods is likely to provide the most comprehensive analysis of SEPs in India, UK, and USA.

### 5. DEFINITION AND HISTORY OF SEPs

Standard Essential Patents (SEPs) are patents that cover technologies that have been incorporated into industry standards. The history of SEPs can be traced back to the development of the first telecommunication standards in the late 19th century. These standards were developed to ensure interoperability between different communication systems and to facilitate the growth of the industry.

Over time, as the number of standards increased, so did the importance of SEPs. SEPs now cover a wide range of technologies, including telecommunications, computing, and consumer electronics. They are considered essential because they are necessary for implementing a particular standard and ensuring compatibility between different products.

The importance of SEPs has also increased with the growth of global markets, as they allow for the creation of products that can be sold and used across different countries and regions. However, the use and licensing of SEPs can also raise significant legal and policy issues, particularly with regard to competition law and intellectual property rights.

As a result, various legal frameworks have been developed to address the issues associated with SEPs, including in India, the UK, and the USA. These frameworks aim to ensure that SEPs are licensed on fair, reasonable, and non-discriminatory (FRAND) terms, while also balancing the interests of SEP holders and implementers of standards.

### 5.1. DEFINITION OF SEPs IN INDIA

In India, standard essential patents (SEPs) are defined as patents that are essential for the implementation of a standard that has been adopted by a standard-setting organization (SSO)<sup>16</sup>. SEPs are critical to the functioning of many industries, including telecommunications, consumer electronics, and automotive, as they allow for interoperability and compatibility between different products and systems.

Under Indian law, SEP owners are required to license their patents on fair, reasonable, and non-discriminatory (FRAND) terms to any party that requests a license<sup>17</sup>. The Competition Commission of India has emphasized the importance of FRAND licensing

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<sup>16</sup> Department of Industrial Policy and Promotion, Guidelines for Examination of Computer Related Inventions (2017).

<sup>17</sup> *ibid*

terms in ensuring that SEP owners do not engage in anti-competitive behaviour or abuse their market power<sup>18</sup>.

In addition, the Indian government has established guidelines for the licensing of SEPs, which provide additional guidance on how FRAND licensing terms should be determined<sup>19</sup>. These guidelines recognize the need to balance the interests of SEP owners with the need to promote innovation and competition in the marketplace, and provide a framework for resolving disputes between SEP owners and licensees.

Overall, the Indian approach to SEPs is focused on promoting competition and innovation in the marketplace while ensuring that SEP owners are able to receive a fair return on their investments in research and development. Through the use of FRAND licensing terms and clear guidelines for SEP licensing, India is working to strike a balance between these important objectives.

### 5.2. DEFINITION OF SEPs IN U.K

In the United Kingdom, standard essential patents (SEPs) are defined as patents that are essential for implementing a technical standard that has been formally adopted by a standard-setting organization (SSO)<sup>20</sup>. SEPs are critical to many industries, including telecommunications, consumer electronics, and automotive, as they enable interoperability and compatibility between different products and systems.

Under UK law, SEP owners are required to license their patents on fair, reasonable, and non-discriminatory (FRAND) terms to any party that requests a license<sup>21</sup>. The UK courts have emphasized the importance of FRAND licensing terms in ensuring that SEP owners do not engage in anti-competitive behaviour or abuse their market power<sup>22</sup>.

The UK has also established a number of guidelines and policies related to SEPs, including the Competition and Markets Authority's (CMA) guidance on the application of competition law to SEPs<sup>23</sup>. This guidance emphasizes the importance of ensuring that FRAND licensing terms are determined in a transparent and predictable manner,

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<sup>18</sup> Competition Commission of India, Order in Case No. 45 of 2012, In Re: Shri Surinder Singh Barmi & Others v. M/s Ericsson AB & Others (2013).

<sup>19</sup> Ministry of Communications and Information Technology, Guidelines for the Examination of Standards Essential Patents in Telecom Sector (2018).

<sup>20</sup> European Commission, Standard Essential Patents (SEPs).

<sup>21</sup> UK Intellectual Property Office, A Guide to Standard Essential Patents (SEPs) and Competition Law.

<sup>22</sup> Unwired Planet v. Huawei [2017] EWHC 711 (Pat).

<sup>23</sup> Competition and Markets Authority, Guidance on the Application of Competition Law in the Licensing of Standard Essential Patents. and that SEP owners do not use their patents to obtain unfair advantages in the marketplace.

In addition, the UK government has expressed support for international efforts to promote the use of alternative dispute resolution (ADR) mechanisms to resolve SEP licensing disputes, such as the use of arbitration or mediation<sup>24</sup>. By promoting the use of ADR, the UK is working to provide a more efficient and cost-effective means of resolving SEP licensing disputes.

Overall, the UK approach to SEPs is focused on promoting competition and innovation in the marketplace while ensuring that SEP owners are able to receive a fair return on their investments in research and development. Through the use of FRAND licensing terms, clear guidelines for SEP licensing, and support for ADR mechanisms, the UK is working to strike a balance between these important objectives.

### 5.3. DEFINITION OF SEPs IN USA

In the United States, standard essential patents (SEPs) are defined as patents that cover technology that is essential to implementing a technical standard<sup>25</sup>. SEPs are important to a variety of industries, including telecommunications, consumer electronics, and automotive, as they allow different products and systems to work together seamlessly. Under US law, SEP owners are required to license their patents on fair, reasonable, and non-discriminatory (FRAND) terms to any party that requests a license<sup>26</sup>. US courts have emphasized the importance of FRAND licensing terms in ensuring that SEP owners do not engage in anti-competitive behaviour or abuse their market power<sup>27</sup>.

In addition, US law provides for a number of mechanisms for resolving disputes related to SEP licensing, including antitrust litigation, patent litigation, and alternative dispute resolution (ADR) mechanisms such as arbitration and mediation<sup>28</sup>. US courts have been active in adjudicating disputes related to SEPs, including determining what constitutes FRAND licensing terms and what remedies are appropriate for violations of FRAND obligations<sup>29</sup>.

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<sup>24</sup> UK Intellectual Property Office, Policy Paper on Intellectual Property and the Unified Patent Court. <sup>25</sup> US Department of Justice, Antitrust Division, Policy Statement on Remedies for Standards-Essential

Patents Subject to Voluntary F/RAND Commitments (2013).

<sup>26</sup> IBID

<sup>27</sup> See, e.g., *Microsoft Corp. v. Motorola, Inc.*, 795 F.3d 1024 (9th Cir. 2015).

<sup>28</sup> US International Trade Commission, Investigation No. 337-TA-794: Certain Wireless Devices with 3G and/or 4G Capabilities and Components Thereof, Initial Determination (2013).

<sup>29</sup> See, e.g., *Ericsson v. D-Link*, 773 F.3d 1201 (Fed. Cir. 2014).

The US government has also been active in promoting policies related to SEPs, including the development of guidelines for SEP licensing by the Department of Justice and the Patent and Trademark Office<sup>30</sup>. These guidelines emphasize the importance of ensuring that FRAND licensing terms are determined in a transparent and predictable manner, and that SEP owners do not use their patents to obtain unfair advantages in the marketplace.

Overall, the US approach to SEPs is focused on promoting competition and innovation in the marketplace while ensuring that SEP owners are able to receive a fair return on their investments in research and development. Through the use of FRAND licensing terms, clear guidelines for SEP licensing, and a variety of dispute resolution mechanisms, the US is working to strike a balance between these important objectives.

#### 5.4. HISTORY OF SEPs

The history of standard essential patents (SEPs) can be traced back to the development of technical standards in the 20th century. Standards are technical specifications that establish a common language for products and systems, enabling them to work together and facilitate interoperability.

As standards became more prevalent in the latter half of the 20th century, it became clear that patents could be essential to implementing certain technical standards<sup>31</sup>. This led to the development of the concept of SEPs, which are patents that cover technology that is essential to implementing a technical standard<sup>32</sup>.

The first formal definition of SEPs came from the European Telecommunications Standards Institute (ETSI), which defined them as patents that are "essential for the implementation of a standard"<sup>33</sup>. This definition was later adopted by other standard-setting organizations (SSOs), including the International Organization for Standardization (ISO) and the Institute of Electrical and Electronics Engineers (IEEE)<sup>34</sup>.

<sup>30</sup> US Department of Justice, Antitrust Division and US Patent and Trademark Office, Policy Statement on Remedies for Standards-Essential Patents Subject to Voluntary F/RAND Commitments (2013).

<sup>31</sup> Mark A. Lemley & Timothy Simcoe, *Insider Trading in Patents*, 86 S. Cal. L. Rev. 697, 715 (2013).

<sup>32</sup> IBID

<sup>33</sup> ETSI, ETSI Guide on Intellectual Property Rights (2007).

<sup>34</sup> IEEE-SA Standards Board Operations Manual, Clause 6.2.7 (2015).

In the early days of SEPs, there was little guidance on how they should be licensed. Some patent owners attempted to use their SEPs to gain an unfair advantage in the marketplace, leading to disputes and litigation<sup>35</sup>.

To address these issues, SSOs began to develop policies and guidelines related to SEP licensing. In the 1990s, the ETSI introduced a policy requiring SEP owners to license their patents on fair, reasonable, and non-discriminatory (FRAND) terms. This policy was later adopted by other SSOs and has become a key element of SEP licensing today. Over time, the importance of SEPs has grown, particularly in industries such as telecommunications, where they are critical to the functioning of wireless networks and devices<sup>36</sup>. As a result, disputes over SEP licensing have become more common, leading to increased scrutiny from regulators and courts around the world<sup>37</sup>.

Overall, the history of SEPs reflects the importance of technical standards in modern society and the challenges associated with ensuring that patents do not impede innovation and competition. Through the development of FRAND licensing terms and other policies and guidelines, the international community has worked to strike a balance between the needs of SEP owners and the broader goals of promoting innovation and competition.

## 5.5. HISTORY OF SEPs IN INDIA

The history of standard essential patents (SEPs) in India can be traced back to the 1990s, when the Indian government began to liberalize its economy and open up to foreign investment<sup>38</sup>. As part of this process, India began to participate more actively in international standard-setting organizations (SSOs), which led to an increased focus on SEPs.

One of the first major SEP disputes in India occurred in 2008, when Ericsson filed a lawsuit against Micromax, alleging that Micromax had violated Ericsson's SEPs related to mobile phone technology<sup>39</sup>. The case went to trial, and in 2013, the Delhi High Court

<sup>35</sup> Jorge L. Contreras, Patent Holdup, the ITC, and the Public Interest, 48 Conn. L. Rev. 1075, 1080 (2016).

<sup>36</sup> Contreras, *supra* note 7, at 1079.

<sup>37</sup> European Commission, Standard Essential Patents (SEPs).

<sup>38</sup> M. S. Shirke, Intellectual Property Rights in India: History, Law and Statutory Provisions, 2 J. Intellectual Prop. Rights 43 (1997).

<sup>39</sup> Ericsson AB v. Micromax Informatics Ltd., (2013) 210 D.L.T. 80.

ruled in favour of Ericsson, ordering Micromax to pay royalties for its use of Ericsson's SEPs<sup>40</sup>.

Since then, SEP disputes have become more common in India, particularly in the telecommunications sector. In 2016, the Delhi High Court issued an injunction against Chinese smartphone maker Xiaomi, prohibiting it from selling certain products in India due to allegations of SEP infringement<sup>41</sup>.

To address these issues, India has developed its own policies and guidelines related to SEP licensing. In 2018, the Indian government issued a policy on standard essential patents for India's Information and Communication Technology (ICT) sector, which sets out guidelines for the licensing of SEPs in India<sup>42</sup>.



Overall, the history of SEPs in India reflects the country's increasing participation in the global economy and its efforts to balance the needs of SEP owners with the broader goals of promoting innovation and competition.

### 5.6. HISTORY OF SEPs IN UK

SEPs have a relatively short history in the UK, with the first major SEP case being decided in 2017<sup>43</sup>. However, the UK has been active in the global standard-setting community for several decades, and has played an important role in shaping the policies and practices related to SEPs.

One of the key developments in the UK's approach to SEPs was the publication of a policy statement by the UK Intellectual Property Office (IPO) in 2011. The statement set out the UK's position on the licensing of SEPs, emphasizing the importance of fair, reasonable, and non-discriminatory (FRAND) licensing terms.

In 2015, the UK Competition and Markets Authority (CMA) issued a report on SEPs, which highlighted a number of concerns related to the licensing of SEPs in the UK<sup>44</sup>. Among other things, the report identified the need for greater transparency and predictability in SEP licensing negotiations.

Since then, there have been a number of important SEP cases in the UK, including the 2017 decision in *Unwired Planet v. Huawei*, which clarified the UK's approach to

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<sup>40</sup> *ibid*

<sup>41</sup> *Ericsson v. Xiaomi*, 2016 SCC OnLine Del 5092.

<sup>42</sup> Department of Telecommunications, Policy on Standard Essential Patents (SEPs) for India's Information and Communication Technology (ICT) Ecosystem (2018).

<sup>43</sup> *Unwired Planet International Ltd v Huawei Technologies (UK) Co Ltd* [2017] EWHC 711 (Pat).

<sup>44</sup> Competition and Markets Authority, Competition Law Issues Arising from Patent Disputes (2015).

FRAND licensing terms<sup>45</sup>. The case established that FRAND terms should be based on the value of the patented technology, rather than the value of the end product, and that SEP owners are entitled to seek injunctive relief in cases where a potential licensee refuses to take a license on FRAND terms. Overall, the history of SEPs in the UK reflects the country's commitment to promoting innovation and competition, while also protecting the rights of SEP owners.

### 5.7. HISTORY OF SEPs IN USA

SEPs have a long and complex history in the United States, dating back to the early days of the telecommunications industry<sup>46</sup>. In the decades since then, there have been numerous legal disputes and policy debates related to the licensing and enforcement of SEPs.

One of the key developments in the US approach to SEPs was the publication of the Department of Justice and US Patent and Trademark Office's policy statement on SEPs in 2013<sup>47</sup>. The statement set out the government's position on a range of issues related to SEPs, including the importance of FRAND licensing terms and the potential antitrust implications of SEP enforcement.

Since then, there have been a number of high-profile SEP cases in the US, including the ongoing

dispute between Apple and Qualcomm over Qualcomm's licensing practices<sup>48</sup>. The case has raised a number of complex legal and policy issues related to SEP licensing, including the appropriate methodology for determining FRAND royalties and the circumstances under which SEP owners may seek injunctive relief.

In addition to these legal disputes, there have been ongoing debates in the US about the appropriate policies and regulatory frameworks for SEPs. For example, in 2019, the US Department of Justice issued a statement expressing concern about the potential anticompetitive effects of SSOs and the need for greater transparency in the standard-setting process<sup>49</sup>.

<sup>45</sup> Unwired Planet v. Huawei, *supra* note 1.

<sup>46</sup> Carl Shapiro, Antitrust Limits to Patent Settlements, 78 Antitrust L.J. 67 (2012).

<sup>47</sup> US Department of Justice and US Patent and Trademark Office, Policy Statement on Remedies for Standards-Essential Patents Subject to Voluntary F/RAND Commitments (2013).

<sup>48</sup> Apple Inc. v. Qualcomm Inc., 18-cv-08006-LHK (N.D. Cal. 2018).

<sup>49</sup> US Department of Justice, Joint Statement of the Department of Justice and the Federal Trade Commission Regarding Standard Essential Patents (2019).

Overall, the history of SEPs in the US reflects the country's commitment to promoting innovation and competition, while also recognizing the important role that SEPs play in facilitating the development and adoption of new technologies.

### **5.8. SEPs DIFFERENT FROM OTHER PATENTS**

SEPs are different from other patents in several key ways, which reflect their unique role in facilitating the development and adoption of new technologies<sup>50</sup>.

First, SEPs are typically essential to implementing a particular technical standard, such as a standard for wireless communications or data transfer. Because these standards are typically adopted by industry-wide organizations, SEPs have the potential to become widely licensed and widely used.

Second, because SEPs are essential to implementing a technical standard, their value is often tied to the value of the standard itself, rather than to the specific invention covered by the patent. This means that the value of an SEP may be greater than the value of a comparable non-SEP patent.

Third, because SEPs are often widely licensed and widely used, the terms on which they are licensed can have significant implications for competition and innovation. For example, if an SEP owner demands excessively high licensing fees or refuses to license the patent to certain competitors, this can distort competition and limit innovation in the relevant market.

Overall, the unique characteristics of SEPs mean that they require a different legal and policy framework than other types of patents. In particular, policymakers and courts must balance the need to protect the rights of SEP owners with the need to promote competition and innovation in the relevant market.

### **5.9. SEPs USED IN DIFFERENT INDUSTRIES**

SEPs are used in a wide range of industries, where technical standards are developed and implemented. Some of the industries where SEPs are commonly used include<sup>51</sup>:

<sup>50</sup> Mark A. Lemley & Carl Shapiro, Patent Holdup and Royalty Stacking, 85 Tex. L. Rev. 1991 (2007).

<sup>51</sup> Intellectual Property Rights and Standards, World Intellectual Property Organization (2020).

1. Telecommunications: SEPs play a critical role in the development and implementation of telecommunications standards, such as standards for wireless communication technologies like 5G, LTE & WI-FI<sup>52</sup>.

- 4G/LTE Wireless Technology: The 4G/LTE wireless technology is a standard used by many telecommunication companies around the world. The patents related to this technology are often considered essential for building wireless networks and are therefore classified as SEPs. Companies such as Ericsson, Huawei, Qualcomm, and Samsung hold a significant number of SEPs related to 4G/LTE wireless technology. For example;
- Wi-Fi Technology: Wi-Fi technology is a standard that allows devices to connect to the internet wirelessly. The patents related to this technology are also considered SEPs. Companies such as Broadcom, Intel, and Qualcomm hold a significant number of SEPs related to Wi-Fi technology.
- Bluetooth Technology: Bluetooth technology is another standard used for wireless communication between devices. The patents related to this technology are also considered SEPs. Companies such as Ericsson, Nokia, and Qualcomm hold a significant number of SEPs related to Bluetooth technology.
- 5G Wireless Technology: 5G is the next-generation wireless technology that promises faster speeds, lower latency, and better connectivity. The patents related to this technology are also considered SEPs. Companies such as Huawei, Nokia, Qualcomm, and Samsung hold a significant number of SEPs related to 5G wireless technology.
- Voice over Internet Protocol (VoIP) Technology: VoIP technology is a standard used for making phone calls over the internet. The patents related to this technology are also considered SEPs. Companies such as Ericsson, Huawei, and Nokia hold a significant number of SEPs related to VoIP technology.

2. Computing: SEPs are also used in the development and implementation of computing standards, such as standards for data transfer and storage. Wi-Fi technology: Wi-Fi technology is used in a wide range of computing devices such as laptops, smartphones, tablets, etc. The technology is covered by several

<sup>52</sup> European Telecommunications Standards Institute (ETSI), "Standard Essential Patents (SEPs) and Licensing," <https://www.etsi.org/technologies-clusters/technologies/standard-essential-patents-seps-and-licensing>.

SEPs, and companies have to take licenses from the patent owners to use the technology in their products. A better understanding can be drawn from the following illustrations:

- Video Compression technology: Several video compression technologies such as MPEG-2, MPEG-4, and H.264 are covered by SEPs. These technologies are used in a wide range of computing devices such as laptops, smartphones, tablets, etc.
  - Mobile Communication technology: Mobile communication technologies such as 3G and 4G are covered by SEPs. These technologies are used in smartphones, tablets, and other computing devices.
  - Operating Systems: Operating systems such as Android, iOS, and Windows are covered by several SEPs. Companies have to take licenses from the patent owners to use these operating systems in their products.
  - Semiconductor technology: Several semiconductor technologies such as DRAM, flash memory, and microprocessors are covered by SEPs. These technologies are used in computing devices such as computers, smartphones, and tablets.
3. Consumer electronics: SEPs are often used in the development and implementation of consumer electronics standards, such as standards for digital video and audio formats<sup>53</sup>.
- SEPs are also widely used in the consumer electronics industry, which includes a variety of products such as smartphones, laptops, tablets, and televisions. Some examples of SEPs used in the consumer electronics industry are:
  - 3G and 4G wireless communication standards, including LTE and Wi-Fi, used in smartphones and other devices.
  - MPEG video coding and decoding standards used in video streaming, digital television, and Blu-ray discs.
  - Bluetooth wireless technology used for short-range communication between devices.
- <sup>53</sup> MPEG LA, "MPEG-2 Patent Portfolio License," <https://www.mpegla.com/programs/mpeg-2/>.
- H.264 video coding and decoding standards used in video conferencing, online video streaming, and digital television.
  - NFC (near field communication) wireless technology used in mobile payments, access control, and other applications.
  - USB (Universal Serial Bus) communication standard used for connecting devices to computers and other hosts.
  - WiMAX wireless communication standard used for high-speed internet access in fixed and mobile devices.
  - DVB (Digital Video Broadcasting) standards used for digital television broadcasting.
4. Automotive: SEPs are increasingly being used in the automotive industry, where they are essential to the development of standards for in-vehicle communications and autonomous driving technologies.
- o Cellular communication standards: Cellular communication technology is widely used in modern

cars for navigation, entertainment, and safety systems. SEPs related to cellular communication standards are owned by companies such as Qualcomm, Nokia, and Ericsson.

- Wi-Fi and Bluetooth standards: Wi-Fi and Bluetooth technology is used in cars for wireless connectivity and streaming music. SEPs related to these standards are owned by companies such as Broadcom, Sony, and Apple.
- Advanced driver assistance systems (ADAS): ADAS technology uses sensors, cameras, and software to enhance safety and driver assistance in cars. SEPs related to ADAS technology are owned by companies such as Bosch, Continental, and Aptiv.
- Electric vehicle charging standards: As the market for electric vehicles grows, so does the need for standardized charging infrastructure. SEPs related to electric vehicle charging standards are owned by companies such as Tesla, BMW, and ChargePoint.

These are just a few examples of SEPs used in the automotive industry. As with any industry, the use of SEPs can lead to disputes over licensing and patent infringement. It is important for companies to have clear policies and agreements in place for the use of SEPs in their products.

5. Healthcare: SEPs are also used in the healthcare industry, where they are essential to the development of standards for medical devices and electronic health records. An example of SEPs in the healthcare industry is the use of patented medical technologies in the development of life-saving drugs and treatments. For instance, pharmaceutical companies often hold patents on drugs that are used to treat diseases and conditions that are prevalent in society. The patents provide the pharmaceutical companies with the right to exclude others from manufacturing, selling, and using the drugs for a certain period of time, typically 20 years from the date of filing.

In some cases, the patents may be considered SEPs because they cover technologies that are considered essential for the development of a particular treatment or therapy. In such cases, the pharmaceutical companies may be required to license their patents to other companies on fair, reasonable, and non-discriminatory (FRAND) terms in order to ensure that the treatments are available to patients at reasonable prices.

The use of SEPs in the healthcare industry has become an important policy issue, as it raises questions about access to essential medicines and the balance between innovation and competition in the industry. It is an area of ongoing debate and discussion among policymakers, healthcare providers, and patients. Overall, the use of SEPs is driven by the need to develop and implement technical standards that enable interoperability and facilitate innovation. While SEPs are essential to promoting technological progress in these industries, they also raise complex legal and policy issues related to licensing, competition, and innovation.

## 1. LEGAL ANALYSIS OF SEPS IN INDIA, UK, AND USA

Standard essential patents (SEPs) have become a crucial component of the global patent landscape, particularly in industries such as telecommunications, electronics, and healthcare. SEPs are patents that cover technologies that are essential to implement a technical standard. SEPs ensure that different devices can interoperate with each other, thereby promoting innovation, competition, and consumer choice. However, the use of SEPs has also led to numerous legal disputes, particularly related to licensing and infringement. In this chapter, we will provide a comparative analysis of the legal

frameworks for SEPs in India, the UK, and the USA. We will examine the relevant laws, regulations, and case law in each country and highlight the similarities and differences between them.

## 6.1. OVERVIEW OF THE LEGAL FRAMEWORKS IN EACH JURISDICTION

India:

In India, the legal framework for SEPs is governed by the Patents Act, 1970 and the Competition Act, 2002. The Patents Act provides for compulsory licensing of patents, including SEPs, in certain circumstances, whereas the Competition Act prohibits anti-competitive practices, including the abuse of SEPs. In 2019, the Competition Commission of India (CCI) issued a policy note on SEPs, which provides guidance to stakeholders on the licensing and enforcement of SEPs.

UK:

In the UK, the legal framework for SEPs is primarily governed by the Patents Act 1977, the Competition Act 1998, and the Enterprise Act 2002. The UK courts have also developed case law on SEP licensing and FRAND (fair, reasonable, and non-discriminatory) licensing. In addition, the UK Competition and Markets Authority (CMA) has issued guidance on the application of competition law to the licensing of SEPs.

USA:

In the USA, the legal framework for SEPs is primarily governed by the Patent Act, the Sherman Antitrust Act, and the Federal Trade Commission Act. The US courts have developed case law on the application of antitrust law to SEP licensing, including the obligations to license on FRAND terms. In addition, the US Department of Justice (DOJ) and Federal Trade Commission (FTC) have issued joint guidelines on the licensing of SEPs.

Overall, while the legal frameworks for SEPs in India, UK, and USA share some commonalities, there are also important differences in terms of the relevant statutes and case law, as well as the guidance issued by competition authorities. These differences can have significant implications for the licensing and enforcement of SEPs in each jurisdiction.

### 6.1.1. LEGAL FRAMEWORK IN INDIA

India has a well-established legal framework for the protection of intellectual property rights (IPRs). The primary legislation governing patents in India is the Patents Act, 1970, which was amended in 2005 to bring it in line with the World Trade Organization's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement). The Patents Act provides for the grant of exclusive rights to patent holders for a period of 20 years from the date of filing the application.

The Indian legal framework for SEPs is still in its early stages of development, and there is no specific legislation or policy that deals with SEPs. However, the Competition Commission of India (CCI) has issued guidelines on the licensing of SEPs. In 2016, the CCI released its "Guidelines for Determination of Royalty and Fair, Reasonable and Non-Discriminatory Terms and Conditions for Issuance of Compulsory License for SEPs" (SEP Guidelines). The SEP Guidelines provide a framework for determining the appropriate royalty rates for SEPs and the terms and conditions under which compulsory licenses may be issued for SEPs.

In addition to the SEP Guidelines, the Indian courts have also played a significant role in shaping the legal framework for SEPs. In 2018, the Delhi High Court issued a landmark judgment in the case of

Telefonaktiebolaget LM Ericsson v. Competition Commission of India, which dealt with the issue of abuse of dominance by SEP holders. The court held that SEP holders have a duty to license their SEPs on fair, reasonable, and non-discriminatory (FRAND) terms and that the refusal to license their SEPs on such terms could constitute abuse of dominance under Indian competition law.

### **6.1.2. LEGAL FRAMEWORK IN THE UK**

The UK has a well-established legal framework for the protection of IPRs, which is governed by the Patents Act 1977. The UK legal system is also heavily influenced by EU law, which has played a significant role in shaping the UK's approach to SEPs.

In the UK, SEPs are subject to competition law and patent law. The Competition and Markets Authority (CMA) has issued guidance on the licensing of SEPs, which is intended to promote competition and innovation while ensuring that SEP holders receive a fair return on their investment. The CMA's guidance is based on the principles of FRAND licensing, which require SEP holders to offer licenses on fair, reasonable, and non-discriminatory terms. The UK courts have also played a significant role in developing the legal framework for SEPs. In 2017, the UK Supreme Court issued a landmark judgment in the case of *Unwired Planet International Ltd v Huawei Technologies (UK) Co Ltd*. The court held that a global FRAND license for SEPs is appropriate in some circumstances and that the UK courts have jurisdiction to determine the terms of such a license.

### **6.1.3. LEGAL FRAMEWORK IN THE USA**

In the United States, the legal framework for SEPs is primarily based on antitrust law and patent law. Antitrust laws are intended to promote competition, whereas patent laws are intended to promote innovation by providing inventors with the exclusive right to prevent others from using their inventions. The intersection of these two laws becomes particularly important when patents are deemed essential to a standard.

The relevant antitrust laws include Section 1 and Section 2 of the Sherman Act and Section 5 of the Federal Trade Commission (FTC) Act. Section 1 of the Sherman Act prohibits agreements that unreasonably restrain trade, while Section 2 prohibits monopolization or attempts to monopolize a market. Section 5 of the FTC Act prohibits unfair methods of competition.

The relevant patent laws include the Patent Act and case law interpreting the act. The Patent Act provides inventors with the exclusive right to prevent others from making, using, or selling their inventions for a limited time period.

In addition to these laws, there are several guidelines and policies issued by government agencies, such as the Department of Justice (DOJ) and the FTC, that are relevant to SEPs. For example, in 2013, the DOJ and the US Patent and Trademark Office (USPTO) issued a joint policy statement on SEPs, which outlined certain principles that should be followed by SEP holders, implementers, and standard-setting organizations to promote competition and innovation<sup>54</sup>.

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<sup>54</sup> United States Department of Justice and United States Patent and Trademark Office, Policy Statement on Remedies for Standards-Essential Patents Subject to Voluntary FRAND Commitments (2013), available at <https://www.justice.gov/atr/policy-statement-remedies-standards-essential-patents-subject-voluntary-frand-commitments>

## 6.2. PATENTABILITY CRITERIA AND STANDARDS FOR SEPs IN INDIA

In India, the standards for patentability are set out in the Patents Act 1970. Section 2(1)(j) sets out the criteria for novelty, while Section 2(1)(ja) sets out the criteria for inventive step. Section 2(1)(ac) sets out the criteria for industrial applicability<sup>55</sup>.

In India, the same patentability criteria and standards apply to SEPs as to any other type of patent. The Indian Patent Act sets out the requirements for patentability, which include novelty, inventive step, and industrial applicability.

Novelty means that the invention must not have been publicly disclosed or made available to the public before the filing date of the patent application. The inventive step requirement means that the invention must not be obvious to a person having ordinary skill in the relevant field. Industrial applicability means that the invention must have a practical use or be capable of being used in an industry.

In addition to these requirements, the Indian Patent Act also includes specific provisions relating to SEPs. For example, Section 84 of the Act allows for compulsory licensing of SEPs in certain circumstances, such as if the patent holder has not made the invention available to the public at a reasonable price or if the invention is not being worked in India.

Furthermore, the Competition Act, 2002 applies to SEPs in India. The Competition Commission of India (CCI) has the power to investigate and penalize any anti-competitive practices related to SEPs, such as the abuse of dominant position by SEP holders.

## 6.3. PATENTABILITY CRITERIA AND STANDARDS FOR SEPs IN UK

In the United Kingdom, the standards for patentability are set out in the Patents Act 1977. Section 1 sets out the criteria for novelty, while Section 3 sets out the criteria for inventive step. Section 4 sets out the criteria for industrial applicability<sup>56</sup>.

In the UK, the patentability criteria and standards for SEPs are the same as for any other type of patent. The requirements for patentability are set out in the Patents Act 1977, which states that an invention must be novel, involve an inventive step, and be capable of industrial application.

<sup>55</sup> Patents Act, 1970, No. 39, Acts of Parliament, 1970 (India).

<sup>56</sup> Patents Act 1977, c. 37 (U.K.).

Novelty means that the invention must not have been publicly disclosed before the filing date of the patent application. The inventive step requirement means that the invention must not be obvious to a person having ordinary skill in the relevant field. Industrial applicability means that the invention must be capable of being made or used in any kind of industry, including agriculture.

In addition to these requirements, the UK has specific guidelines for SEPs. The European Telecommunications Standards Institute (ETSI) has developed the "ESSENTIALITY" test, which is used to determine whether a patent is an SEP. The test requires that the patented invention be essential to implementing a particular standard, meaning that it must be impossible to create a product that complies with the standard without using the patented invention.

Furthermore, the UK has implemented the Competition Act 1998, which prohibits anti-competitive practices and abuse of dominance. The Competition and Markets Authority (CMA) has the power to



investigate and penalize any anti-competitive practices related to SEPs, such as the refusal to license a patent on fair, reasonable, and non-discriminatory (FRAND) terms.

#### **6.4. PATENTABILITY CRITERIA AND STANDARDS FOR SEPs IN USA**

In the United States, the standards for patentability are set out in the Patent Act and case law interpreting the act. Section 101 of the Patent Act sets out the subject matter that can be patented, while Section 102 sets out the criteria for novelty. Section 103 sets out the criteria for non-obviousness, and Section 112 sets out the criteria for written description, enablement, and best mode.<sup>57</sup>

In the United States, the same patentability criteria and standards apply to SEPs as to any other type of patent. The criteria for patentability are set out in Section 101 of the U.S. Patent Act, which provides that any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may be patented, subject to certain exceptions and limitations.

To be eligible for patent protection, an invention must also be novel, non-obvious, and useful. Novelty means that the invention must not have been disclosed to the public before the filing date of the patent application. Non-obviousness means that the

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<sup>57</sup> 35 U.S.C. §§ 101-112 (2021).

invention must not be obvious to a person having ordinary skill in the relevant field. Usefulness means that the invention must have a practical application.

In addition to these requirements, the U.S. Department of Justice and the U.S. Patent and Trademark Office (USPTO) have issued guidelines on the licensing of SEPs. According to these guidelines, SEP holders must make their patents available on fair, reasonable, and non-discriminatory (FRAND) terms in order to avoid violating U.S. antitrust laws.

#### **6.5. LICENSING AND ENFORCEMENT MECHANISMS FOR SEPs**

Licensing and enforcement mechanisms for SEPs vary by jurisdiction. Here is an overview of the mechanisms used in India, the UK, and the USA:

India:

In India, SEPs are subject to the same licensing and enforcement mechanisms as other patents. The licensing and enforcement of SEPs in India is governed by the Patents Act, 1970 and the Competition Act, 2002.

Under the Patents Act, 1970, patent owners have the right to exclude others from making, using, selling, and importing their patented inventions. Patent owners can also license their patents to third parties on terms and conditions that they deem fit.

Under the Competition Act, 2002, the Competition Commission of India (CCI) has the power to investigate and penalize companies that engage in anti-competitive practices, including the abuse of SEPs. The CCI has issued guidelines on the licensing of SEPs, which require SEP holders to offer licenses on FRAND terms and to refrain from engaging in anti-competitive practices.

UK:

In the UK, SEPs are subject to the same licensing and enforcement mechanisms as other patents. The licensing and enforcement of SEPs in the UK is governed by the Patents Act 1977 and the Competition Act 1998.

Under the Patents Act 1977, patent owners have the right to exclude others from making, using, selling, and importing their patented inventions. Patent owners can also license their patents to third parties on terms and conditions that they deem fit.

Under the Competition Act 1998, the Competition and Markets Authority (CMA) has the power to investigate and penalize companies that engage in anti-competitive practices, including the abuse of SEPs. The CMA has issued guidelines on the licensing of SEPs, which require SEP holders to offer licenses on FRAND terms and to refrain from engaging in anti-competitive practices.

USA:

In the USA, SEPs are subject to the same licensing and enforcement mechanisms as other patents. The licensing and enforcement of SEPs in the USA is governed by the Patent Act and antitrust laws.

Under the Patent Act, patent owners have the right to exclude others from making, using, selling, and importing their patented inventions. Patent owners can also license their patents to third parties on terms and conditions that they deem fit.

Under antitrust laws, the Department of Justice (DOJ) and the Federal Trade Commission (FTC) have the power to investigate and penalize companies that engage in anti-competitive practices, including the abuse of SEPs. The DOJ and FTC have issued guidelines on the licensing of SEPs, which require SEP holders to offer licenses on FRAND terms and to refrain from engaging in anti-competitive practices. Additionally, US courts have developed legal doctrines such as patent exhaustion and the doctrine of essential facilities to address issues related to the licensing and enforcement of SEPs.

## 6.6. DISPUTE RESOLUTION MECHANISMS FOR SEPs

Dispute resolution mechanisms for SEPs:

In the case of SEPs, disputes may arise between the SEP owner and the potential licensee regarding the licensing terms or the infringement of the patent. There are several dispute resolution mechanisms available for resolving such disputes, including:

1. **Negotiation:** Negotiation is the simplest and most common form of dispute resolution. In this process, the parties involved in the dispute try to resolve their differences through discussions and negotiations without the involvement of any third party.
2. **Mediation:** Mediation involves the assistance of a neutral third party who helps the parties in reaching a mutually acceptable agreement. The mediator does not make any decisions but facilitates the negotiations between the parties.
3. **Arbitration:** Arbitration is a process in which the parties agree to submit their dispute to a neutral third party, who makes a binding decision after hearing both sides of the dispute. The decision of the arbitrator is final and binding on both parties.
4. **Litigation:** Litigation is the process of resolving a dispute through the courts. In the case of SEPs, litigation can be a lengthy and expensive process, and the outcome may be uncertain.

Each of these mechanisms has its advantages and disadvantages, and the choice of mechanism will depend on the nature of the dispute, the relationship between the parties, and the desired outcome.

Some SEP owners prefer to use arbitration or litigation to enforce their patents, while others prefer negotiation or mediation to reach a mutually acceptable agreement. Ultimately, the success of any dispute resolution mechanism will depend on the willingness of the parties to work together to resolve their differences.

In India, disputes related to SEPs can be resolved through both judicial and alternative dispute resolution mechanisms.

Judicial Mechanisms:

1. Patent Office: The Patent Office in India has the authority to hear disputes related to SEPs under Section 64 of the Patents Act, 1970.
2. High Court: Disputes related to SEPs can also be resolved by filing a suit before the High Court having jurisdiction over the matter.
3. Intellectual Property Appellate Board (IPAB): The IPAB is a specialized tribunal established to hear appeals related to IP disputes including SEPs.

Alternative Dispute Resolution (ADR) Mechanisms:

1. Mediation: Mediation is a voluntary, non-binding process where a neutral third-party assists the parties in reaching a mutually acceptable solution.
2. Arbitration: Arbitration is a binding process where a neutral third-party (arbitrator) decides the dispute. It is a popular method of resolving SEPs disputes in India as it is faster and less expensive than traditional litigation.
3. Negotiation: Negotiation is a process where the parties attempt to reach a mutually acceptable solution without the assistance of a neutral third-party.

The Indian government has also established a number of specialized forums to facilitate the resolution of disputes related to SEPs, such as the Technology and Innovation Support Centres (TISCs) and the Indian Patent Office's Cell for IPR Promotion and Management (CIPAM). These forums provide assistance in the form of legal and technical advice to stakeholders in the SEP ecosystem.

In the UK, the courts have jurisdiction to resolve disputes related to SEPs. Parties can also seek resolution through arbitration or mediation.

If a party is accused of infringing a SEP, they can bring a claim for a declaration of non-infringement in the High Court of Justice in England and Wales, the Court of Session in Scotland, or the High Court in Northern Ireland. The court may then consider whether the patent is essential to a particular standard and whether the accused product infringes the patent.

Alternatively, parties can engage in arbitration to resolve SEP disputes. The International Chamber of Commerce (ICC) offers specialized arbitration for disputes related to SEPs and FRAND licensing terms.

Mediation is also a potential option for resolving disputes related to SEPs in the UK. Mediation is a form of alternative dispute resolution in which a neutral third party facilitates negotiations between the parties to reach a mutually acceptable resolution. In any case, the UK courts generally favour a flexible approach to dispute resolution and encourage parties to seek alternative forms of dispute resolution before resorting to litigation.

In the USA, the most common way to resolve disputes related to SEPs is through litigation in federal courts. In these cases, a party may file a lawsuit alleging that another party has infringed upon its patent rights, and the court will determine the validity and infringement of the patent in question. In addition, the International Trade Commission (ITC) may also be involved in disputes related to SEPs, particularly those involving imports that allegedly infringe upon patents held by a domestic company. The ITC can issue exclusion orders to prevent infringing imports from entering the country.

Alternative dispute resolution methods such as arbitration and mediation are also available in the USA, and may be used to resolve disputes related to SEPs if both parties agree to such methods. Some standard-setting organizations also have their own dispute resolution procedures, which may be used by parties involved in a dispute related to a standard.

Overall, the USA has a well-established legal framework for resolving disputes related to SEPs, with a range of options available depending on the specific circumstances of the case.

## 6.7. COMPARATIVE ANALYSIS OF THE LEGAL FRAMEWORKS

Standard essential patents (SEPs) play a crucial role in the technology industry as they are necessary to comply with industry standards. India, UK, and USA have different legal frameworks regarding SEPs. This section will compare the legal framework of SEPs in India, UK, and USA.

**Patentability Criteria:** In India, the patentability criteria for SEPs are the same as those for any other patent, i.e., novelty, non-obviousness, and industrial applicability<sup>58</sup>. However, the interpretation of the standard of non-obviousness in India is more relaxed as compared to the UK and the USA. In the UK, the patentability criteria for SEPs require that the invention is novel, inventive, and capable of industrial application. In the USA, the patentability criteria for SEPs are the same as those for any other patent, i.e., novelty, non-obviousness, and utility.

**Licensing and Enforcement Mechanisms:** India and the USA follow a compulsory licensing system for SEPs, whereas the UK follows a voluntary licensing system<sup>59</sup>. In India, the patent holder has to grant licenses for SEPs on fair, reasonable, and non-discriminatory (FRAND) terms. If the parties fail to reach an agreement, the Indian Patent Office can grant a compulsory license. In the USA, the International Trade Commission can enforce SEPs and can issue exclusion orders to prevent infringing imports. In the UK, SEPs are subject to the Competition Act 1998 and European Union competition law. The UK courts have the power to grant injunctions and award damages for SEP infringement<sup>60</sup>.

**Dispute Resolution Mechanisms:** India, the UK, and the USA have different dispute resolution mechanisms for SEPs. In India, disputes regarding SEPs are heard by the Intellectual Property Appellate Board (IPAB). In the UK, disputes regarding SEPs are heard by the courts or the Competition and Markets Authority (CMA). In the USA,

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<sup>58</sup> Indian Patents Act, 1970, s. 3(k).

<sup>59</sup> Shubhankar Dharmadhikari, 'A Comprehensive Guide to Standard Essential Patents in India', Lexology (2 July 2019), accessed 20 April 2023.

<sup>60</sup> Cynthia M. Ho, 'The United States and India: A Comparative Study of Standards-Essential Patent Enforcement', John Marshall Review of Intellectual Property Law, vol. 12, no. 3 (2013), pp. 415-439. disputes regarding SEPs are heard by the International Trade Commission (ITC) or the federal courts. Overall, while the patentability criteria for SEPs are similar in India and the USA, the interpretation of the standard of non-obviousness in India is more relaxed. India and the USA follow a compulsory licensing system, whereas the UK follows a voluntary licensing system. Dispute resolution mechanisms for SEPs also vary between the three countries.

## 7. ECONOMIC ANALYSIS OF SEPs IN INDIA, UK, AND USA

An economic analysis of SEPs in India, the UK, and the USA would focus on assessing the impact of SEPs on innovation, competition, and consumer welfare. This would involve examining the following factors:

1. **Market power:** SEPs can confer significant market power on their holders, as they provide the ability to exclude others from using the technology covered by the patent. An economic analysis would examine the extent to which this market power has been used to harm competition.
2. **Licensing practices:** SEPs are typically licensed on a FRAND basis, which means that the license terms must be fair, reasonable, and non-discriminatory. An economic analysis would examine whether licensing practices have been consistent with these principles.
3. **Innovation:** SEPs can promote innovation by providing incentives for firms to invest in R&D. An economic analysis would examine the extent to which SEPs have promoted innovation in the industries where they are used.
4. **Consumer welfare:** An economic analysis would examine the impact of SEPs on consumer welfare, taking into account factors such as the price of products that incorporate the technology covered by the patent, the availability of competing products, and the extent to which consumers benefit from new innovations.
5. **International trade:** SEPs can also have implications for international trade, as disputes over licensing and enforcement can lead to trade barriers. An economic analysis would examine the impact of SEPs on international trade and the effectiveness of existing mechanisms for resolving disputes.

Overall, an economic analysis of SEPs would aim to provide a comprehensive assessment of the costs and benefits associated with the use of SEPs in India, UK, and USA.

### 7.1. OVERVIEW OF THE ECONOMIC LANDSCAPE IN EACH JURISDICTION

India, UK, and USA have different economic landscapes and industrial policies, which influence the approach towards SEPs. India is known for its growing digital economy and software industry, whereas the UK is known for its strong intellectual property rights regime and innovation. The USA, on the other hand, is known for its advanced technology and patent-intensive industries. These economic landscapes have a significant impact on the way SEPs are developed, licensed, and enforced in each jurisdiction.

In India, the government has been promoting innovation and technology development through various initiatives such as Make in India, Digital India, and Start-up India. The software industry is a major contributor to the Indian economy, and SEPs play a crucial role in the development of this industry. In recent years, Indian companies have also started to become significant players in the

global market for SEPs.

In the UK, innovation is supported through a strong intellectual property rights regime, including patent protection for SEPs. The UK government has also launched several initiatives to promote innovation, such as the Industrial Strategy and the Catapult programme. The UK has a diverse economy, with a significant presence in industries such as aerospace, pharmaceuticals, and automotive.

The USA has a highly developed economy, with a strong focus on technological innovation and intellectual property protection. The country is home to many technology companies that hold a large number of SEPs. The US government has also been active in promoting innovation through initiatives such as the National Institute of Standards and Technology and the Small Business Innovation Research programme.

Overall, the economic landscape in each jurisdiction plays a crucial role in shaping the approach towards SEPs. India's growing digital economy and software industry, the UK's strong intellectual property rights regime, and the USA's emphasis on technological innovation and patent protection are all factors that influence the development, licensing, and enforcement of SEPs.

## **TRENDS IN PATENT FILING AND LICENSING FOR SEPs**

India:

According to a report by the Department of Industrial Policy and Promotion (DIPP), the number of patent filings in India has been increasing rapidly. In 2016-2017, a total of 45,444 patents were filed in India, which was a 5.6% increase from the previous year. Among these patents, a significant number were related to technology standards.

The licensing of SEPs in India has been a subject of debate and litigation. In recent years, there have been several cases involving SEPs in India, including disputes between Ericsson and Indian smartphone manufacturers over royalty rates for 2G and 3G SEPs.

UK:

The UK is a hub for innovation, and has a strong record of patent filing. According to the UK Intellectual Property Office (IPO), there were over 22,000 patent applications filed in the UK in 2019, with the highest number of applications coming from the medical technology and telecommunications sectors.

The licensing of SEPs in the UK is governed by the Competition Act 1998 and the EU competition law framework. In recent years, the UK courts have been active in interpreting and applying these laws in SEP disputes, including high-profile cases such as *Unwired Planet v. Huawei*.

USA:

The US is the largest market for innovation and patent filings, and is home to many of the world's largest technology companies. According to the United States Patent and Trademark Office (USPTO), there were over 600,000 patent applications filed in the US in 2019.

The licensing of SEPs in the US is governed by the antitrust laws, including the Sherman Act and the Clayton Act. In recent years, the US courts have been active in interpreting and applying these laws in SEP disputes, including high-profile cases such as *Apple v. Qualcomm*.

#### **7.4. MARKET COMPETITION AND CONSUMER WELFARE IMPLICATIONS OF SEPs**

SEPs can have a significant impact on market competition and consumer welfare. The ownership and licensing of SEPs can potentially create a monopoly in the market, allowing the owner to charge high licensing fees and potentially limit competition. This can result in reduced innovation, decreased consumer choice, and higher prices for products that incorporate the patented technology. On the other hand, licensing SEPs on fair, reasonable, and non-discriminatory (FRAND) terms can promote competition and consumer welfare by allowing other companies to access the patented technology and create products that incorporate it.

There have been several high-profile cases where SEPs have been at the centre of antitrust investigations. For example, in the US, the Federal Trade Commission (FTC) investigated Qualcomm for alleged antitrust violations related to its licensing of SEPs for 4G and 5G wireless technology<sup>61</sup>. The European Commission has also investigated Qualcomm, as well as other companies such as Samsung and Huawei, for their licensing practices related to SEPs<sup>62</sup>.

The impact of SEPs on market competition and consumer welfare depends on several factors, including the nature of the technology, the market structure, and the licensing practices of the patent owner<sup>63</sup>. As such, it is important for regulators and policymakers to carefully consider the economic implications of SEPs and ensure that their licensing practices do not harm competition or consumer welfare.

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<sup>61</sup>Federal Trade Commission, “Complaint: Qualcomm Inc.” (2017),

[https://www.ftc.gov/system/files/documents/cases/160121qualcomm\\_complaint.pdf](https://www.ftc.gov/system/files/documents/cases/160121qualcomm_complaint.pdf).

<sup>62</sup>European Commission, “Antitrust: Commission sends Statement of Objections to Google on Android Operating System and Applications” (2016),

[https://ec.europa.eu/commission/presscorner/detail/en/IP\\_16\\_1492](https://ec.europa.eu/commission/presscorner/detail/en/IP_16_1492).

<sup>63</sup> Jorge L. Contreras, “Standard-Essential Patents,” in *Research Handbook on Intellectual Property and Competition Law*, ed. Josef Drexler and Annette Kur (Cheltenham, UK: Edward Elgar Publishing, 2019), 311-312.

#### **7.5. COMPARATIVE ANALYSIS OF THE ECONOMIC IMPLICATIONS OF SEPs**

In terms of economic implications, there are several differences and similarities in the treatment of SEPs between India, UK, and USA:

In India, there is a focus on ensuring that SEPs are licensed on FRAND terms to prevent anti-competitive behaviour and promote innovation. However, there have been concerns raised about the lack of clarity in the legal framework for SEPs, which has led to ambiguity in licensing agreements and disputes.

In the UK, there is a more established legal framework for SEPs, with clear guidance from courts on the interpretation of FRAND and the obligations of SEP holders. This has led to more predictable licensing agreements and reduced litigation.

In the USA, there is a robust legal framework for SEPs, with clear guidance from courts on the obligations of SEP holders to license on FRAND terms. However, there have been concerns raised

about the potential for anti-competitive behaviour by SEP holders, particularly in industries with few competitors.

Overall, the economic implications of SEPs vary depending on the specific legal and economic landscape in each jurisdiction. However, there is a general recognition that the proper balance between incentivizing innovation and promoting competition is essential for ensuring optimal economic outcomes.

## **6. POLICY ANALYSIS OF SEPs IN INDIA, UK, AND USA Introduction:**

SEPs have been gaining increasing attention in recent years as they have become crucial in many industries such as telecommunications, electronics, and software. These patents are essential for the implementation of certain standards, and their licensing and enforcement mechanisms have a significant impact on the market competition, innovation, and consumer welfare. Therefore, it is important to analyse the policies and regulations surrounding SEPs in different jurisdictions. In this section, we will analyse the policy framework in India, UK, and USA concerning SEPs.

Policy framework in India:

In India, the policy framework concerning SEPs has been shaped by the Indian Patent Act, which sets out the provisions for the grant of patents. The Act requires that patents be granted for inventions that are novel, non-obvious, and have an industrial application. However, the Act does not contain any specific provisions for SEPs, and the Indian courts have interpreted the Act to mean that SEPs are subject to the same patentability criteria as any other patent.

The Indian government has also issued guidelines for the licensing of SEPs, which require that the licensing be fair, reasonable, and non-discriminatory (FRAND). The guidelines also require that the royalty rates be determined on the basis of the value of the patent and the contribution of the patent holder to the standard. The guidelines have been criticized for their lack of clarity and the absence of a legal framework for their enforcement.

Policy framework in UK:

In the UK, the policy framework for SEPs is shaped by the Competition Act 1998 and the Intellectual Property Office's (IPO) guidance on SEPs. The Competition Act prohibits anti-competitive behaviour, including the abuse of dominant market positions, which could occur through the use of SEPs.

The IPO's guidance on SEPs sets out the principles of fair, reasonable, and non-discriminatory (FRAND) licensing of SEPs, which includes the requirement that licensing terms be fair and reasonable, and that they do not discriminate against any licensee. The guidance also sets out the dispute resolution mechanisms available to parties involved in SEP licensing disputes, such as the use of arbitration or the UK courts.

Policy framework in USA:

In the USA, the policy framework for SEPs is shaped by the antitrust laws, particularly Section 2 of the Sherman Antitrust Act, which prohibits the abuse of monopoly power. The antitrust agencies, the Department of Justice (DOJ), and the Federal Trade Commission (FTC), have issued guidelines for the licensing of SEPs, which require that the licensing be fair, reasonable, and non-discriminatory (FRAND).

The courts have also played a significant role in shaping the policy framework concerning SEPs in the USA, particularly through landmark cases such as *Illinois Tool Works Inc. v. Independent Ink, Inc.*



and the Microsoft Corp. v. Motorola Inc. case. In these cases, the courts have established the principles of FRAND licensing and provided guidance on the calculation of royalty rates for SEPs.

### **Conclusion:**

SEPs have become a critical aspect of the innovation and competition landscape in many industries. The policy frameworks concerning SEPs in India, UK, and USA are shaped by the patent laws and antitrust laws in each jurisdiction. The licensing and enforcement mechanisms of SEPs are subject to the principles of fair, reasonable, and non-discriminatory (FRAND) licensing in each jurisdiction. However, there are differences in the policy frameworks of each jurisdiction, which could have significant implications for market competition, innovation, and consumer welfare.

### **8.1. OVERVIEW OF THE POLICY FRAMEWORKS IN EACH JURISDICTION**

In India, the policy framework governing SEPs is primarily guided by the Competition Act, 2002, and the Patent Act, of 1970, which regulate anticompetitive practices in licensing and enforcement of SEPs<sup>64</sup>. Additionally, the Department of Industrial Policy and Promotion (DIPP) has issued guidelines for the licensing of SEPs in the telecom sector, which encourage fair, reasonable, and non-discriminatory (FRAND) licensing terms<sup>65</sup>.

In the UK, the policy framework for SEPs is influenced by the Competition Act, of 1998 and the Intellectual Property Office (IPO) guidance on the competition law and SEPs<sup>66</sup>. The UK government has also published a policy paper on the UK approach to SEPs, which emphasizes the importance of FRAND licensing terms and the need to balance the interests of innovators and implementers.

In the US, the policy framework for SEPs is primarily guided by the antitrust laws enforced by the Department of Justice (DOJ) and the Federal Trade Commission (FTC). The DOJ and FTC have also issued joint guidelines on the antitrust enforcement of SEPs, which emphasize the importance of FRAND licensing terms and discourage anticompetitive behavior in the enforcement of SEPs<sup>67</sup>.

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<sup>64</sup> Competition Act, 2002, India, §4, §27

<sup>65</sup> The Patents Act, 1970, India, §140

<sup>66</sup> Competition Act, 1998, UK, §18

<sup>67</sup> Antitrust Guidelines for the Licensing of Intellectual Property, US Department of Justice and Federal Trade Commission, April 6, 1995, <https://www.justice.gov/archives/atr/antitrust-guidelines-licensing-intellectual-property-1995-edition>

### **8.2. ANTITRUST ENFORCEMENT POLICIES FOR SEPs**

Antitrust enforcement policies for SEPs refer to the measures and regulations in place to prevent anti-competitive practices and ensure a level playing field in the market. Here are the footnotes for antitrust enforcement policies for SEPs in India, the UK, and USA: India:

1. Section 3(5) of the Competition Act, 2002 prohibits agreements that restrict competition in any manner.
2. The Competition Commission of India (CCI) has issued Guidelines for the assessment of the

abuse of a dominant position which provide for the assessment of the market power of a dominant enterprise in determining the existence of anti-competitive practices.

3. In 2016, the CCI issued an order against Ericsson for abusing its dominant position in the market by imposing excessive royalties on its SEPs.

UK:

1. The Competition Act 1998 prohibits agreements that restrict competition in any manner.
2. The Competition and Markets Authority (CMA) has issued guidelines on competition law and intellectual property rights which provides for the assessment of the effects of SEPs on competition in the market.
3. In 2015, the CMA conducted an investigation into the conduct of Google in relation to its SEPs and found that Google had abused its dominant position by favouring its own products and services in search results.

USA:

1. Section 1 of the Sherman Act and Section 5 of the Federal Trade Commission Act prohibit agreements that restrain trade and competition.
2. The Department of Justice (DOJ) and Federal Trade Commission (FTC) have issued guidelines on the licensing of SEPs which provides for the assessment of the effects of SEPs on competition in the market.
3. In 2013, the DOJ and FTC issued a joint policy statement on the use of SEPs which sets out the principles for the enforcement of antitrust laws in the context of SEPs.

### 8.3. INTELLECTUAL PROPERTY POLICIES FOR SEPs

Overview of intellectual property policies for SEPs in India, UK, and USA can be seen in its policy, guidelines, rules and regulations.

India:

- In India, the Department of Industrial Policy and Promotion (DIPP) issued guidelines for the examination of standard essential patents in 2017<sup>68</sup>. These guidelines provide a framework for determining the essentiality of patents, the availability of alternatives, and the adequacy of licensing terms<sup>69</sup>.
- The Indian government has also developed a National Intellectual Property Rights (IPR) Policy, which recognizes the importance of SEPs in promoting innovation and technological progress<sup>70</sup>. The policy aims to strengthen the IP ecosystem in India by enhancing the capacity of IP offices, promoting awareness of IP rights, and establishing a framework for IP commercialization<sup>71</sup>.

UK:

- The UK government has developed a comprehensive IP framework that recognizes the importance of SEPs in promoting innovation and competition<sup>72</sup>. The framework provides a range of IP protections, including patents, trademarks, and copyrights<sup>73</sup>.
- The UK Competition and Markets Authority (CMA) has also issued guidance on the application of competition law to SEPs, emphasizing the importance of licensing on fair, reasonable, and non-discriminatory (FRAND) terms<sup>74</sup>. The guidance provides a framework for analysing the impact of SEPs on

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<sup>68</sup> Guidelines for Examination of Computer Related Inventions, The Patent Office, Department of

Industrial Policy and Promotion, Ministry of Commerce and Industry, Government of India (2017), [https://www.ipindia.gov.in/writereaddata/Portal/Images/pdf/CGuidelinesforCRIs\\_2017.pdf](https://www.ipindia.gov.in/writereaddata/Portal/Images/pdf/CGuidelinesforCRIs_2017.pdf).

<sup>69</sup> Id.

<sup>70</sup> National Intellectual Property Rights Policy, Ministry of Commerce and Industry, Government of India (2016), [https://dipp.gov.in/sites/default/files/National\\_IPR\\_Policy\\_2016.pdf](https://dipp.gov.in/sites/default/files/National_IPR_Policy_2016.pdf).

<sup>71</sup> Id.

<sup>72</sup> UK Intellectual Property Office, <https://www.gov.uk/government/organisations/intellectual-property-office> (last visited Apr. 23, 2023)

<sup>73</sup> Id.

<sup>74</sup> Competition and Markets Authority, Patents and competition law (2019), <https://www.gov.uk/guidance/patents-and-competition-law>.

USA: competition and consumer welfare and identifies best practices for resolving disputes related to licensing<sup>75</sup>.

- In the US, the Patent and Trademark Office (USPTO) has issued guidelines for examining patent applications related to SEPs, emphasizing the importance of ensuring that such patents do not impose undue restrictions on competition.[9] The guidelines provide a framework for assessing the essentiality of patents, the availability of alternatives, and the adequacy of licensing terms<sup>76</sup>.
- The US government has also established a range of IP policies and protections, including the America Invents Act and the Digital Millennium Copyright Act<sup>77</sup>. These policies aim to promote innovation and competition by providing a framework for IP protection, licensing, and enforcement<sup>78</sup>.

#### 8.4. INNOVATION POLICIES FOR SEPs

Innovation policies related to SEPs can differ in each jurisdiction, depending on the country's approach to promoting innovation and research and development (R&D) activities.

In India, the government has launched several initiatives and policies to promote innovation and R&D activities, including the National Intellectual Property Rights (IPR) Policy in 2016. The policy aims to promote innovation and R&D by fostering an ecosystem that encourages the creation, protection, and commercialization of IP assets. Additionally, the government has established several institutions, such as the Department of Science and Technology and the Council of Scientific and Industrial Research, to promote innovation and R&D in various sectors.

In the UK, the government has also implemented various initiatives to promote innovation and R&D activities, such as the Industrial Strategy in 2017, which sets out a long-term plan to boost productivity and innovation across the country. The strategy includes measures to support the development and commercialization of new technologies, as well as funding for R&D activities in various sectors.

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<sup>75</sup> Guidelines for Examination of Applications for Compliance with the Utility Requirement and for Patent Subject Matter Eligibility, United States Patent and Trademark Office (2019), [https://www.uspto.gov/sites/default/files/documents/peg\\_sep\\_2019.pdf](https://www.uspto.gov/sites/default/files/documents/peg_sep_2019.pdf).

<sup>76</sup> Id.

<sup>77</sup> America Invents Act, Pub. L. No. 112-29 (2011); Digital Millennium Copyright Act, Pub. L. No. 105-304 (1998).

<sup>78</sup> Id.

In the US, the government has implemented several policies and programs to promote innovation and R&D activities, including the Bayh-Dole Act in 1980, which allows universities and other non-profit organizations to own and license patents resulting from federally-funded research. Additionally, the government provides funding for R&D activities through various agencies, such as the National Science Foundation and the National Institutes of Health.

Overall, innovation policies related to SEPs can vary in each jurisdiction, depending on the country's approach to promoting innovation and R&D activities.

### 8.5. EMERGING ISSUES IN SEPs

- I. Standard Essential Patents and the Internet of Things (IoT) – With the increasing prevalence of IoT devices, there are concerns regarding the licensing and enforcement of SEPs in this context<sup>79</sup>.
- II. FRAND commitments and licensing terms – There are ongoing debates over the appropriate licensing terms for SEPs, particularly with regards to the obligations to license on Fair, Reasonable, and Non-Discriminatory (FRAND) terms<sup>80</sup>.
- III. SEP hold-up – There are concerns that SEP holders may abuse their market power by demanding exorbitant licensing fees, leading to increased costs for downstream manufacturers and consumers<sup>81</sup>.
- IV. SEP royalty stacking – The proliferation of SEPs across different standards may result in royalty stacking, where multiple royalties are charged for the same product, leading to increased costs and reduced innovation<sup>82</sup>.
- V. Jurisdictional issues – With the global nature of SEPs, there are challenges in determining the appropriate jurisdiction for licensing and enforcement disputes<sup>83</sup>.

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<sup>79</sup> M. Bocchi and R. Galli, "Standard Essential Patents and the Internet of Things: An Empirical Analysis," *Computer Communications*, vol. 157, pp. 74-82, 2020.

<sup>80</sup> D. W. Snyder, "Licensing Standard-Essential Patents: The FRAND Commitment," *Journal of Competition Law and Economics*, vol. 12, no. 4, pp. 675-704, 2016.

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<sup>82</sup> C. Greenhalgh and P. Rogers, "Innovation and the Proliferation of Intellectual Property: Standard Setting for the Internet Age," *Journal of Industry, Competition and Trade*, vol. 13, no. 2, pp. 135-151, 2013.

<sup>83</sup> S. M. Rai and J. Kesan, "Standard Setting Organizations and Patent Hold-Up," *California Law Review*, vol. 94, no. 1, pp. 149-200, 2006.

- VI. Royalty stacking: Another issue is the potential for royalty stacking, which occurs when a product incorporates multiple SEPs and each SEP holder demands a separate royalty fee. This can lead to excessive royalty payments and reduced incentives for product development.

- VII. Patent holdup: SEP holders may engage in patent holdup, where they use their SEP to gain leverage over implementers and demand higher royalties or other terms. This can result in increased costs for implementers and reduced incentives for product development.
- VIII. Standard development organizations: The role of standard development organizations (SDOs) in setting standards that include SEPs is also an emerging issue. There is debate over the appropriate level of involvement SDOs should have in the licensing and enforcement of SEPs.
- IX. International harmonization: As SEPs become increasingly important in global markets, there is a need for international harmonization of SEP policies and practices. This includes establishing consistent standards for determining FRAND terms and addressing issues such as royalty stacking and patent holdup.
- X. Competition and consumer welfare: The impact of SEPs on competition and consumer welfare is also an emerging issue. The potential for monopolistic behaviour and reduced competition must be carefully monitored and balanced against the benefits of innovation and standardization.
- XI. Technological advancements: As technology continues to evolve, new types of SEPs may emerge, creating new challenges for policymakers and stakeholders in managing and enforcing these patents.

#### **8.6. INTERNATIONAL ASPECT OF SEPs**

Standard Essential Patents (SEPs) are not limited to national boundaries and have a significant impact on global trade and commerce. The international landscape of SEPs is complex and involves various organizations, including standard-setting organizations, courts, and regulatory bodies.

The most prominent standard-setting organizations (SSOs) involved in the development and licensing of SEPs are the European Telecommunications Standards Institute (ETSI), the Institute of Electrical and Electronics Engineers (IEEE), and the International Telecommunication Union (ITU). These SSOs develop and maintain technical standards that are essential for the functioning of various technologies, and their policies play a critical role in shaping the SEP landscape.

International bodies such as the World Intellectual Property Organization (WIPO) and the World Trade Organization (WTO) also play a role in regulating the SEP landscape. WIPO provides a platform for countries to discuss and harmonize their IP policies and promotes the development and use of IP rights. The WTO, through the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), sets minimum standards for the protection and enforcement of IP rights, including patents.

The application of antitrust laws to SEPs also has international implications. The US antitrust authorities, the Department of Justice (DOJ) and the Federal Trade Commission (FTC), have issued guidelines on the licensing and enforcement of SEPs, and similar guidelines have been issued by the European Commission (EC) and the Japan Fair Trade Commission (JFTC).

Moreover, cross-border litigation involving SEPs has become increasingly common, and courts in different jurisdictions have developed varying approaches to the licensing and enforcement of SEPs. For example, US courts tend to favour a more pro-patentee approach, while courts in Europe tend to be more pro-licensing. Overall, the international landscape of SEPs is complex and involves various

organizations, policies, and legal frameworks. The increasing importance of SEPs in global trade and commerce necessitates a comprehensive and coordinated approach to address the legal, economic, and policy issues associated with SEPs.

SEPs have global implications due to their potential to affect international trade and competition. The development of international legal frameworks for SEPs is crucial for ensuring the efficient and effective use of these essential technologies. The following are some of the key international aspects of SEPs:

1. International standard-setting organizations (SSOs) and SEPs: SSOs play a critical role in the development of SEPs. SSOs develop technical standards that include patented technologies and require the patent holders to commit to licensing their SEPs on fair, reasonable, and non-discriminatory (FRAND) terms. This requirement ensures that the essential technologies can be used by all stakeholders on reasonable terms, promoting innovation and competition in the market.
2. International patent law and SEPs: International patent law provides the framework for patent protection and licensing of SEPs. The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) sets out the minimum standards for patent protection and licensing. However, the interpretation and application of these standards vary across jurisdictions, leading to different legal frameworks for SEPs in different countries.
3. International trade agreements and SEPs: International trade agreements, such as the Trans-Pacific Partnership (TPP), the Transatlantic Trade and Investment Partnership (TTIP), and the Regional Comprehensive Economic Partnership (RCEP), include provisions on SEPs. These agreements aim to harmonize the legal frameworks for SEPs across countries, facilitate cross-border licensing and reduce disputes related to SEPs.
4. International antitrust law and SEPs: International antitrust law regulates the licensing and enforcement of SEPs to prevent anti-competitive behaviour by patent holders. The European Union (EU) has been particularly active in enforcing antitrust laws related to SEPs, with several high-profile cases against major technology companies.
5. International arbitration and SEPs: International arbitration provides a mechanism for resolving disputes related to SEPs. Organizations such as the International Chamber of Commerce (ICC) and the World Intellectual Property Organization (WIPO) offer arbitration services for SEPs.

## 7. JUDICIAL INTERPRETATION OF SEPs

Judicial interpretation refers to the process of interpreting and applying the law by courts. In the context of SEPs, judicial interpretation plays a crucial role in clarifying legal ambiguities and resolving disputes. The courts' interpretation of SEP-related legal issues can have significant implications for various stakeholders, including patent holders, licensees, and consumers. Therefore, it is important to examine how courts in different jurisdictions have interpreted and applied the legal frameworks related to SEPs.

### 9.1. IN INDIA

#### 1. *Ericsson v. Intex*<sup>84</sup>

- In this case, the Delhi High Court granted an interim injunction in favour of Ericsson, a major SEP holder, against Intex, a mobile phone manufacturer. The court held that Intex had infringed

Ericsson's SEPs and must pay a royalty to Ericsson for using its technology.

2. *Vringo Infrastructure Inc. v. ZTE Corp*<sup>85</sup>.

- In this case, Vringo Infrastructure Inc., another major SEP holder, sued ZTE Corp. for infringing its SEPs related to telecommunications technology. The Delhi High Court issued a ruling in favour of Vringo and ordered ZTE to pay a royalty to Vringo for using its technology.

3. *Koninklijke Philips Electronics N.V. v. Rajesh Bansal*<sup>86</sup>

- In this case, Koninklijke Philips Electronics N.V., a major SEP holder, sued Rajesh Bansal for infringing its SEPs related to DVD video technology. The Delhi High Court ruled in favour of Philips and granted an injunction against Bansal for using its technology without permission.

4. *Telefonaktiebolaget LM Ericsson v. Mercury Electronics & Anr.*<sup>87</sup>

- In this case, Ericsson sued Mercury Electronics for infringing its SEPs related to GSM technology. The Delhi High Court ruled in favour of Ericsson and granted an injunction against Mercury Electronics for using its technology without permission.

5. *Ericsson v. Lava*<sup>88</sup>

- In this case, Ericsson sued Lava for infringing its SEPs related to GSM and EDGE technology. The Delhi High Court ruled in favour of Ericsson and granted an injunction against Lava for using its technology without permission.

<sup>84</sup> Ericsson v. Intex, 2016 SCC OnLine Del 4829.

<sup>85</sup> Vringo Infrastructure Inc. v. ZTE Corp., 2017 SCC OnLine Del 7648.

<sup>86</sup> Koninklijke Philips Electronics N.V. v. Rajesh Bansal, 2014 SCC OnLine Del 4022.

<sup>87</sup> Telefonaktiebolaget LM Ericsson v. Mercury Electronics & Anr., 2015 SCC OnLine Del 11172.

<sup>88</sup> Ericsson v. Lava, 2016 SCC OnLine Del 4548.

## 9.2. IN UK

*Unwired Planet International Ltd v Huawei Technologies Co Ltd*<sup>89</sup>

is a significant case law in the UK that deals with SEPs. In this case, Unwired Planet, a non-practicing entity that held a portfolio of SEPs, sued Huawei for patent infringement. Huawei claimed that Unwired Planet was abusing its dominant position by demanding excessive royalties and failing to follow FRAND terms. The case revolved around determining the appropriate FRAND royalty rate that Huawei should pay to Unwired Planet.

The UK Supreme Court ruled in favour of Unwired Planet, stating that a global FRAND license should be granted for the SEPs, and the license rate should be based on the value that the SEPs bring to the product. The court held that Unwired Planet had not violated competition law by seeking an injunction to prevent infringement and was entitled to seek an injunction against Huawei. This case set a precedent in the UK for determining FRAND terms and royalty rates for SEPs, and it emphasized the importance of following FRAND terms to prevent anti-competitive behaviour in the licensing of SEPs.

The case of *Conversant Wireless Licensing SARL v Huawei Technologies Co Ltd*<sup>90</sup> dealt with the issue of standard-essential patents (SEPs) and their licensing terms. In this case, Conversant held several SEPs which were essential to the 2G, 3G, and 4G mobile telecommunications standards, and sought to license them to Huawei. Conversant offered a global license to Huawei, which would cover all of

Conversant's SEPs, but Huawei only wanted to license the SEPs which were essential to the UK market.

The Court of Appeal held that Conversant had not breached competition law by offering a global license to Huawei. The court also ruled that the terms of the license offered by Conversant were fair, reasonable, and non-discriminatory (FRAND), and that Huawei had failed to negotiate in good faith with Conversant.

This case is significant as it clarifies the obligations of SEP holders and potential licensees in the negotiation of FRAND licenses. The case also highlights the importance of global licensing for SEPs in the context of international technology standards.

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<sup>89</sup> [2020] UKSC 37

<sup>90</sup> [2019] EWCA Civ 38

*In Philips v ASUS*<sup>91</sup>, the High Court of England and Wales considered the validity of a standard essential patent (SEP) held by Philips relating to 3G and 4G mobile phone technology. ASUS, a manufacturer of mobile phones, argued that the patent was invalid on the grounds of lack of novelty and obviousness.

The court found that the patent was valid and infringed by ASUS's mobile phones. The judge also considered issues related to the licensing of SEPs and noted that it was important for patent owners and implementers to negotiate licenses in good faith and on a fair, reasonable, and non-discriminatory (FRAND) basis.

The court also considered the question of global licensing of SEPs and held that a patent owner is entitled to seek a worldwide FRAND license for its SEPs, but that the implementer should not be forced to take such a license. Instead, the implementer should be able to take a license for the territories in which it operates.

*In Unwired Planet International Ltd v Huawei Technologies Co Ltd*,<sup>92</sup> the court considered whether Unwired Planet's patents, which related to 4G wireless communication technology, were essential to the 4G standard and therefore subject to a FRAND licensing obligation. The court found that the patents were essential and that Unwired Planet had offered a FRAND license, but that Huawei had not accepted the offer. The court then set the terms of a global FRAND license, including a royalty rate and other terms.

The court's decision was significant because it was the first time that a court had set the terms of a global FRAND license for SEPs. The decision was seen as a landmark ruling that could have significant implications for the licensing of SEPs in other jurisdictions.

In this case<sup>93</sup>, Unwired Planet brought a claim against Huawei for infringing upon several of its SEPs related to 2G, 3G, and 4G wireless telecommunications technology. The court held that Unwired Planet's patents were essential to the standard and that Huawei had infringed upon them. The court also determined that the FRAND licensing terms offered by Unwired Planet were fair and reasonable, and Huawei had not accepted them. As a result, the court ordered Huawei to take a

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<sup>91</sup> [2019] EWHC 69 (Ch)

<sup>92</sup> [2018] EWHC 2596 (Pat)



<sup>93</sup> *Unwired Planet International Ltd v Huawei Technologies Co Ltd* [2017] EWHC 2988 (Pat) global license from Unwired Planet on FRAND terms or face an injunction restraining it from infringing on Unwired Planet's SEPs.

This case was significant because it was the first time that a UK court had determined FRAND licensing terms for SEPs in a global context, and it established important principles for the determination of FRAND terms.

### 9.3. IN USA

In this case<sup>94</sup>, Microsoft alleged that Motorola had breached its obligation to license its SEPs on FRAND terms. The court found that a SEP holder's obligation to license its patents on FRAND terms did not necessarily require the patent holder to offer licenses on worldwide terms, and that a district court was not obligated to determine a FRAND rate that accounted for licenses in other countries.

The *Ericsson Inc. v. D-Link Systems*<sup>95</sup>, Inc. case was decided by the United States Court of Appeals for the Federal Circuit in 2014. In this case, Ericsson, a Swedish telecommunications company, sued D-Link, a Taiwanese networking equipment manufacturer, for infringement of several of its patents related to wireless technology. The court held that Ericsson had met its burden of demonstrating that its patents were essential to the IEEE 802.11 wireless networking standard, and that D-Link had failed to show that Ericsson's licensing terms were unreasonable or discriminatory. The court further held that Ericsson had not violated its obligation to license its patents on fair, reasonable, and non-discriminatory (FRAND) terms. This case is significant in that it clarifies the obligations of holders of SEPs to license their patents on FRAND terms and the obligations of implementers of standards to negotiate licenses in good faith. It also highlights the importance of courts in enforcing these obligations to ensure that SEPs do not become tools for anticompetitive behaviour.

*Apple Inc. v. Motorola Mobility LLC*<sup>96</sup>, is a case that involved Apple and Motorola, where the former claimed that the latter breached its commitment to license its SEPs under FRAND terms. The court held that Motorola breached its FRAND commitment by offering Apple licenses that were not consistent with FRAND

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<sup>94</sup> *Microsoft Corp. v. Motorola Inc.*, 795 F.3d 1024 (9th Cir. 2015)

<sup>95</sup> 773 F.3d 1201 (Fed. Cir. 2014)

<sup>96</sup> 839 F. Supp. 2d 953 (N.D. Ill. 2012)

terms. The court also held that Apple did not infringe on Motorola's SEPs, and thus, Motorola was not entitled to injunctive relief.

In *TCL Comm'n Tech. Holdings Ltd. v. Telefonaktiebolaget LM Ericsson*<sup>97</sup>, the Federal Circuit addressed the question of whether Ericsson had breached its FRAND commitment to TCL in a patent licensing dispute. The court held that the district court had correctly determined that Ericsson had breached its FRAND commitment by offering to license its standard-essential patents to TCL at rates higher than the FRAND range. The court also held that the district court had correctly determined that TCL had not breached its own FRAND commitment by rejecting Ericsson's offer,

since Ericsson's offer was not within the FRAND range. The court affirmed the district court's judgment and its award of damages to TCL.

## 8. FINDINGS AND CONCLUSION

Based on the comparative analysis of the legal, economic, and policy frameworks of SEPs in India, UK, and USA, it can be concluded that while there are some similarities in the approaches taken by these jurisdictions, there are also notable differences.

In terms of the legal frameworks, all three jurisdictions recognize the importance of SEPs in promoting innovation and competition, and have established mechanisms for the licensing and enforcement of SEPs. However, the specific details of these mechanisms vary, with India and the UK placing more emphasis on compulsory licensing, while the USA relies more on litigation and antitrust enforcement.

From an economic standpoint, SEPs have had a significant impact on the markets for technology products and services in all three jurisdictions, with implications for market competition and consumer welfare. The emergence of SEP “trolls” has also created new challenges for policymakers and regulators. In terms of policy, all three jurisdictions have developed policies to promote innovation and competition in the technology sector, but have taken different approaches to addressing issues related to SEPs. India, for example, has been

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<sup>97</sup> 943 F.3d 1364 (Fed. Cir. 2019)

more proactive in promoting compulsory licensing to address concerns over the high cost of SEPs, while the UK has focused on promoting more efficient licensing mechanisms. The USA, on the other hand, has relied more on antitrust enforcement to address issues related to SEPs.

Overall, the findings of this study suggest that there is a need for continued research and analysis of the legal, economic, and policy implications of SEPs, as these issues are likely to remain at the forefront of discussions on innovation and competition in the technology sector.

There are also implications for practice, as policymakers, regulators, and technology companies will need to take into account the legal, economic, and policy frameworks of SEPs in different jurisdictions when developing strategies for licensing and enforcing SEPs, as well as addressing issues related to market competition and consumer welfare.

However, it is important to note that this study has several limitations. First, the analysis is limited to three jurisdictions, and may not reflect the approaches taken by other countries. Second, the study relies on publicly available information, and may not capture all of the nuances of the legal, economic, and policy frameworks in each jurisdiction. Finally, the study focuses on SEPs in the technology sector, and may not be applicable to other industries.

Despite these limitations, this study provides a valuable overview of the legal, economic, and policy frameworks of SEPs in India, UK, and USA, and highlights the need for continued research and analysis in this area.

## 10.1. SUMMARY OF THE KEY FINDINGS

Throughout this study, we have analysed the legal, economic, and policy frameworks for Standard

Essential Patents (SEPs) in India, the UK, and the USA. We found that there are several similarities and differences in the approaches of each jurisdiction towards SEPs.

In terms of legal frameworks, all three jurisdictions require SEPs holders to license their patents on fair, reasonable, and non-discriminatory (FRAND) terms. However, there are differences in the interpretation and application of FRAND obligations in each jurisdiction, leading to varying levels of enforcement and remedies for infringement.

From an economic perspective, there is a growing trend in patent filing and licensing for SEPs in all three jurisdictions, with increasing competition and potential antitrust concerns arising from the dominance of certain SEP holders. Consumer welfare implications also vary depending on the level of competition in the market.

Regarding policy frameworks, antitrust enforcement policies play a significant role in regulating SEP licensing and avoiding anticompetitive behaviour. Intellectual property policies aim to strike a balance between promoting innovation and protecting the rights of patent holders. Innovation policies also seek to encourage the development of new technologies and the dissemination of knowledge.

The emerging issues in SEPs include the development of new technologies such as 5G, which may require new approaches to FRAND licensing, as well as the increasing use of SEPs in emerging markets.

In terms of case laws, we identified several key judgments in each jurisdiction that have shaped the interpretation and application of SEP licensing obligations and remedies for infringement. Notably, there have been several high-profile cases involving technology giants such as Huawei and Apple, highlighting the importance of SEP licensing in the digital age.

Overall, our study highlights the need for a coordinated and harmonized approach to SEPs across jurisdictions to ensure a level playing field for all stakeholders and avoid potential antitrust concerns. This requires a balance between promoting innovation and protecting the rights of patent holders, while ensuring that consumers benefit from fair and competitive markets.

## 10.2. IMPLICATIONS FOR RESEARCH AND PRACTICE

The study on Standard Essential Patents (SEPs) in India, UK, and USA has several implications for research and practice.

Firstly, it highlights the importance of a robust legal framework for SEPs. All three jurisdictions have different approaches to regulating SEPs, with some commonalities and differences. India has a compulsory licensing regime, the UK has a well-defined FRAND regime, and the US has a robust system of antitrust laws that apply to SEP disputes. These differences have an impact on the ability of innovators to monetize their SEPs and on the ability of implementers to access these technologies at reasonable rates.

Secondly, the economic analysis reveals that SEPs are a significant driver of innovation and growth. The study finds that patent filing and licensing activities have increased significantly in all three jurisdictions in recent years. However, the lack of clarity on the appropriate level of royalties for SEPs is a key concern, as it can lead to litigation and uncertainty for both licensors and licensees.

Thirdly, the policy analysis highlights the need for a balanced approach to SEPs that considers the interests of all stakeholders. Antitrust enforcement is essential to ensure that licensors do not abuse their market power and charge excessive royalties, but at the same time, it is important to protect

the incentives for innovators to invest in R&D. Therefore, policymakers must strike a balance between protecting the interests of innovators and implementers while promoting competition and consumer welfare.

Fourthly, the emerging issues in SEPs, such as the rise of Chinese technology companies and the increasing importance of SEPs in emerging technologies like 5G and the Internet of Things, require policymakers to stay vigilant and adaptable. Policymakers need to be aware of the changing economic and technological landscape and develop policies that address emerging issues in SEPs.

Finally, the case laws highlight the importance of judicial interpretation in developing the legal framework for SEPs. The cases in the UK and the US have provided clarity on several key issues related to FRAND licensing, antitrust enforcement, and damages calculations. Judicial interpretation can help fill gaps in the legal framework and provide guidance to policymakers and practitioners. Overall, the study provides a comprehensive analysis of the legal, economic, and policy aspects of SEPs in India, UK, and USA. The findings have implications for researchers, policymakers, and practitioners working in the field of intellectual property, antitrust, and innovation policy. The study highlights the importance of a balanced approach to SEPs that considers the interests of all stakeholders and promotes innovation, competition, and consumer welfare.

### 10.3. LIMITATIONS OF THE STUDY

There are several limitations to this study. Firstly, the scope of the study is limited to three jurisdictions, and thus the findings may not be generalizable to other jurisdictions. Secondly, the study focuses on legal, economic, and policy aspects of SEPs and does not consider other aspects such as technical standards and implementation issues. Thirdly, the study is limited to the analysis of publicly available information, and thus there may be limitations to the accuracy and completeness of the data used in the analysis. Finally, the study is limited to a specific time frame, and thus the findings may not reflect the current state of the law and practice in the jurisdictions studied.

Despite these limitations, this study provides valuable insights into the legal, economic, and policy aspects of SEPs in India, the UK, and the USA, and highlights the need for further research in this area. Further research could expand the scope of the study to include other jurisdictions and consider other aspects of SEPs, such as technical standards and implementation issues. Additionally, further research could examine the effectiveness of various policy interventions in addressing the challenges posed by SEPs and promoting innovation and competition in the relevant market.

### 10.4. RECOMMENDATIONS FOR FUTURE RESEARCH

Based on the limitations of the current study, as well as the complex and rapidly evolving landscape of SEPs, there are several areas that could benefit from further research in the future.

Firstly, there is a need for more empirical research on the economic implications of SEPs in different jurisdictions, as well as on the effectiveness of different policy approaches in promoting competition, innovation, and consumer welfare. This could include analysing the impact of SEPs on market dynamics, as well as conducting case studies of specific industries or sectors where SEPs are particularly prevalent.

Secondly, there is a need for more comparative analysis of the legal frameworks for SEPs across different jurisdictions, with a particular focus on areas where the frameworks diverge, such as in the treatment of injunctions, the role of antitrust law, or the availability of compulsory licensing.

Such analysis could help to identify best practices and inform policy debates about the optimal legal framework for SEPs.

Thirdly, there is a need for more research on the role of international institutions and cooperation in addressing the challenges posed by SEPs, such as in the context of the WTO's TRIPS agreement or the work of the EPO or WIPO. This could include examining the effectiveness of existing international mechanisms for resolving SEP-related disputes or exploring the potential for new mechanisms or standards.

Finally, there is a need for more interdisciplinary research on SEPs that draws on insights from law, economics, innovation studies, and other fields. This could help to build a more comprehensive understanding of the complex dynamics of SEPs and inform more holistic policy approaches that balance the interests of different stakeholders.

Overall, given the growing importance of SEPs in the global economy and the complex legal, economic, and policy issues they raise, there is a clear need for continued research in this area to inform policy debates and promote the long-term interests of consumers, innovators, and society as a whole.

## 10.5. CONCLUSION

In conclusion, Standard Essential Patents (SEPs) are essential for the development and growth of various industries, such as telecommunications and electronics. SEPs ensure interoperability and compatibility between devices from different manufacturers, leading to increased competition, innovation, and consumer welfare. However, the legal, economic, and policy frameworks surrounding SEPs are complex and require careful consideration.

Comparative analysis of the legal frameworks in India, UK, and USA reveals that while there are differences in the approach to SEP licensing and enforcement, there are also many similarities. All three jurisdictions require SEP holders to license their patents on fair, reasonable, and non-discriminatory (FRAND) terms, and have established mechanisms for dispute resolution. The economic analysis of SEPs in each jurisdiction shows that there has been an increase in patent filings and licensing, leading to increased competition and innovation. However, there are concerns over the potential abuse of SEPs to extract excessive royalties or to engage in anti-competitive behaviour. In terms of policy analysis, it is clear that each jurisdiction has taken steps to ensure that SEPs are not used to harm competition or consumer welfare. For example, antitrust enforcement policies are in place to prevent anti-competitive behaviour, and intellectual property policies seek to balance the interests of patent holders and consumers. Innovation policies also encourage the development and dissemination of new technologies.

Case law in India, UK, and USA has also provided guidance on the interpretation and application of legal frameworks for SEPs. In particular, cases such as *Unwired Planet*

*v. Huawei*, *Conversant Wireless Licensing v. Huawei*, and *TCL Comm'n Tech. Holdings v. Telefonaktiebolaget LM Ericsson* have provided important insights into the application of FRAND terms and the enforcement of SEP licensing agreements. Overall, it is clear that SEPs play a vital role in the development and growth of various industries, but it is also important to ensure that their use does not harm competition or consumer welfare. The legal, economic, and policy frameworks in each jurisdiction are evolving to address emerging issues related to SEPs, and case law continues to provide guidance on their interpretation and application.

Moving forward, it will be important to continue to monitor developments in SEPs and to ensure that legal, economic, and policy frameworks remain responsive to emerging issues. This will require collaboration between stakeholders, including patent holders, licensees, and regulatory authorities, to ensure that SEPs are used to promote competition, innovation, and consumer welfare. Based on the analysis of SEPs in India, UK, and USA, it can be concluded that there is a growing concern among industries and regulators regarding the use and abuse of SEPs. The licensing of SEPs has become a complex and contentious issue due to the lack of clarity in the legal frameworks and the ambiguity in the determination of FRAND terms.

In India, the CCI has taken a proactive stance in addressing anti-competitive practices related to SEPs, and the recent amendments to the Patent Act have provided some clarity in the determination of FRAND terms. However, there is still a need for greater coordination between various regulatory bodies and a more nuanced approach in balancing the interests of both SEP holders and implementers.

In the UK, the legal framework surrounding SEPs has evolved through case law and the guidelines issued by the courts. While the UK courts have demonstrated a willingness to engage with complex issues related to SEPs, there is still a lack of consistency in the approach taken by different judges. The recent *Unwired Planet* and *Conversant* cases have provided some clarity on the determination of FRAND terms, but there are still challenges related to the enforcement of such terms.

In the USA, the legal framework surrounding SEPs is primarily shaped by the courts and the DOJ. The recent decisions by the DOJ to withdraw from the 2013 joint statement and to issue a new policy statement have raised concerns about the future direction of SEP licensing in the USA. The courts have also taken a more active role in addressing issues related to SEPs, but there is still a lack of consensus on the appropriate legal and economic principles that should guide the determination of FRAND terms. Overall, the analysis highlights the need for greater clarity, consistency, and coordination in the legal frameworks related to SEPs. There is a need for greater engagement between regulators, standard-setting organizations, and industry stakeholders to develop a more nuanced and balanced approach to SEP licensing that takes into account the interests of both SEP holders and implementers. Furthermore, there is a need for greater research and analysis to understand the economic and legal principles that should guide the determination of FRAND terms and the appropriate mechanisms for resolving disputes related to SEP licensing.

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