

Sisvel POS Royalty Analysis

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Introduction

ASSIGNMENT

Assess the extent to which the proposed royalty rates of Sisvel's point-of-sales ("POS") cellular patent pool can be considered FRAND based on how the implied aggregate royalty compares to precedents.

QUALIFICATIONS

- **PhD in Economics from MINES ParisTech**, with doctoral research focused on the *Role of Standard Essential Patents for Innovation in ICT Standards*
- **Expert on FRAND and SEP Licensing:** providing expert economic evidence in IP litigation in both the United States and the United Kingdom; e.g. in *Samsung v. ZTE* before the High Court of England and Wales. Regularly advises both SEP licensors and implementers on FRAND rate determination.
- **SEP Policy Expert:** former member of the European Commission's Expert Group on Standard Essential Patents. Testimony to the European Parliament on SEP regulation. Lead researcher of a consortium assisting the European Commission with the impact assessment of its proposed SEP Regulation.
- **Empirical Research Expertise:** applying large-scale technical, patent, legal, and market datasets to generate rigorous, evidence-based insights that inform strategic, licensing, regulatory, and policy decisions.

Understanding of Benefits of Cellular in POS Products

- 1 Increased sales opportunities** from earning higher revenue in locations where fixed POS systems are impractical.
- 2 Reduced lost sales** due to Wi-Fi failures or electricity outages.
- 3 Shorter queues and faster service** using efficient, handheld POS devices inside and outside stores.
- 4 Support for omni-channel retail**, since POS devices work well with modern retail models like Buy Online and Curbside Pickup.
- 5 Lower infrastructure costs** due to reduced need for wired Ethernet connections and on-site service.
- 6 Greater flexibility for seasonal businesses** since POS devices can be deployed quickly when retailers change locations.
- 7 Real-time business data** from synchronization with cloud platforms, enabling live sales reporting and customer loyalty tracking.
- 8 Improved customer experience** and satisfaction through contactless payments, digital receipts, and faster transactions.
- 9 Enabling mobile workforces** outside traditional stores, such as delivery drivers and service technicians.

Analysis of the FRAND Character of a Patent Pool's Rates

PRELIMINARY CONSIDERATIONS

- **Patent pools deliver licensing efficiencies for both licensors and licensees**

Participation in a patent pool is voluntary; therefore, rates must be sufficiently attractive to induce SEP holders, including holders of valuable SEPs, to participate. Pools that achieve broad licensor participation are particularly beneficial for licensees.

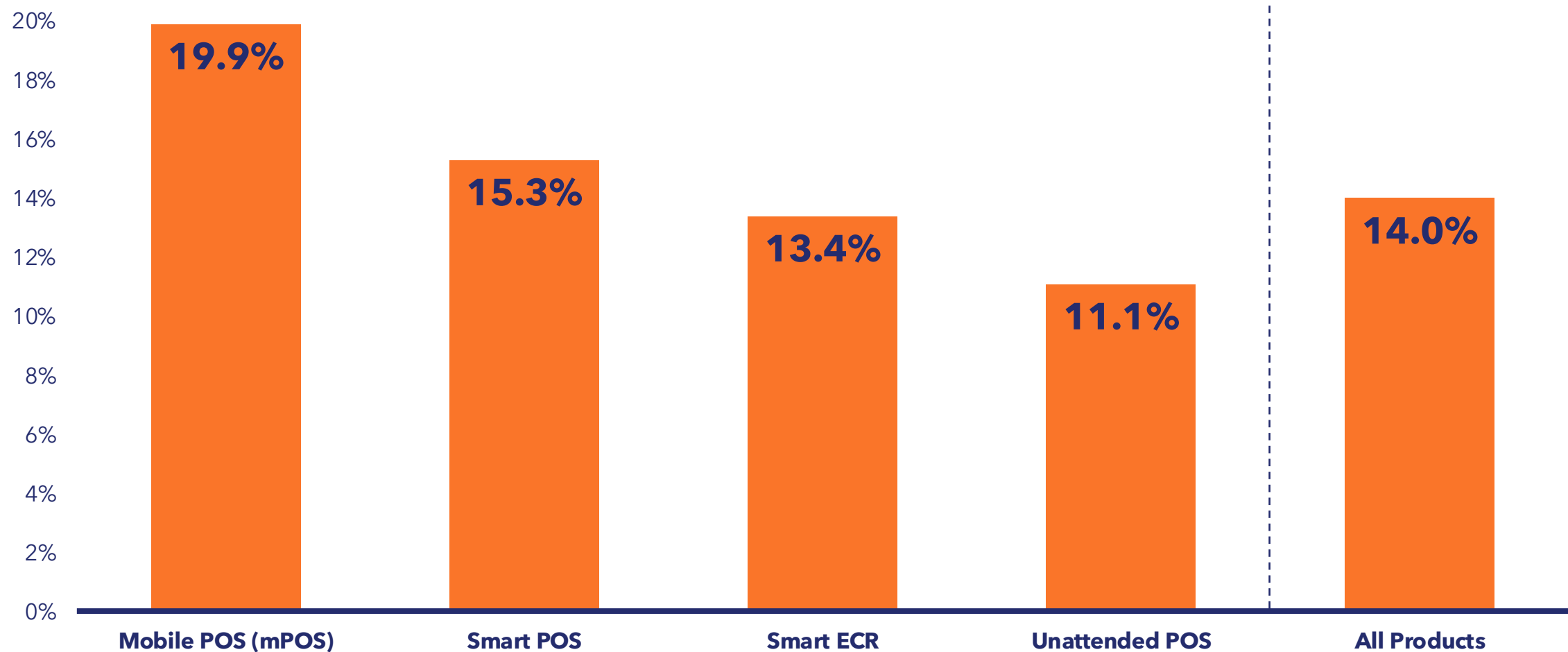
- **Diverse licensor member composition is conducive to a FRAND licensing program**

Agreement among licensor members with different business models and licensing objectives on a set of rates is already a first indication of market acceptability, as licensor members balance objectives of generating licensing revenue and supporting standard adoption.

- **Many pools grow over time**

Many pools aim for wide coverage of the stack, and grow over time, but rates usually remain constant. Implied per-patent rates and aggregate royalty burdens thus tend to decline over time and can become even more attractive to licensees over time.

Price Premium of POS Products: Cellular vs. Non-Cellular



45 Current Sisvel POS Licensors

All but three licensed through other cellular pools or were assessed in FRAND precedents

- Alfred Consulting LLC
- *BlackBerry Limited*
- China Mobile Communications Group Co., Ltd.
- China United Network Communication Group Co., Ltd
- *Datang Mobile Communications Equipment Co., Ltd.*
- *Deutsche Telekom AG*
- *Electronic and Telecommunications Research Institute*
- **Godo Kaisha IP Bridge**
- *Harfang IP Inc.*
- **Huawei Technologies Co., Ltd.**
- IPForM, Inc.
- *IP Innovation GK*
- *JVCKENWOOD Corporation*
- *KDDI Corporation*
- *Koninklijke KPN N.V.*
- *Korea Advanced Institute of Science and Technology*
- *KT Corporation*
- *LG Electronics Inc.*
- *Mitsubishi Electric Corporation*
- *NEC Corporation*
- **Nokia Corporation**
- **Nokia Technologies Oy**
- **Optis Cellular Technology, LLC**
- **Optis Wireless Technology, LLC**
- *Orange S.A.*
- *Pantech Corporation*
- *Pegasus Wireless Innovation LLC*
- *Quetel Wireless Solutions Co., Ltd.*
- *Robert Bosch GmbH*
- *Siemens AG*
- *Sisvel International S.A.*
- *SK Telecom Co. Ltd.*
- *Sony Group Corporation*
- *Sun Patent Trust*
- *Technology In Ariscale, LLC*
- *TIM S.p.A.*
- *Telefónica S.A.*
- *Unisoc (Shanghai) Technologies Co., Ltd*
- **Unwired Planet International Limited**
- **Unwired Planet, LLC**
- *Verizon Patent & Licensing Inc.*
- *vivo Mobile Communication Co., Ltd*
- *Vodafone Group Services Limited*
- *Wilus Inc.*
- *ZTE Corporation*

Bold licensors were parties in relevant FRAND litigations. *Italic* licensors participated in the Avanci 4G and/or 5G Vehicle patent pools. **Bold-italic** ones are both. See <https://www.sisvel.com/licensing-programmes/iot/point-of-sale/#tab-patent-owners>; <https://www.avanci.com/vehicle/4gvehicle/>; <https://www.avanci.com/vehicle/5gvehicle/>.

ETSI Intellectual Property Rights Policy

“ SECTION 6.1

When an ESSENTIAL IPR relating to a particular STANDARD or TECHNICAL SPECIFICATION is brought to the attention of ETSI, the Director-General of ETSI shall immediately request the owner to give within three months an irrevocable undertaking in writing that it is prepared to grant irrevocable licences on fair, reasonable and non-discriminatory (“FRAND”) terms and conditions under such IPR to at least the following extent:

- MANUFACTURE, including the right to make or have made customized components and sub-systems to the licensee’s own design for use in MANUFACTURE;
- sell, lease, or otherwise dispose of EQUIPMENT so MANUFACTURED;
- repair, use, or operate EQUIPMENT; and
- use METHODS.

The above undertaking may be made subject to the condition that those who seek licences agree to reciprocate.

See ETSI, *ETSI Intellectual Property Rights Policy*, Annex 6 to the ETSI Rules of Procedure, in *ETSI Directives*, 12 Dec. 2022, available at <https://www.etsi.org/images/files/IPR/etsi-ipr-policy.pdf>, at pp. 44-45.

Sisvel Proposed POS Royalty Rates

PROPOSED ROYALTY PER UNIT

**POS Sound
Box**

€1.2

**Low-End
Device**

€2.0

**Mid-End
Device**

€5.0

**High-End
Device**

€8.0

It is my understanding that the patents in the Sisvel POS pool account for approximately **50% of the full cellular SEP stack.**¹

Notes: ¹ To calculate and verify the cellular SEP stack, I relied on a recent publicly available report ranking the entities that own the largest number of standard-essential patents relating to 5G cellular technology (Patently, The World's Leading 5G Patent Owners, 2025). The resulting SEP stack therefore reflects 5G-declared SEPs only. The resulting figure for Global 5G SEP families (48.1% overall, and 41.6% for 5G SEP families with issued U.S. patents) is close to the 50% share provided by Sisvel, suggesting that this is a plausible estimate of pool members' share in the overall stack of cellular Declared SEPs (not limited to 5G).

Available POS Sales Data from Counterpoint

VARIABLE	NOTES
Brand	Castles, Centerm, Datecs, Dspread, Dynamicode, Ingenico, Landi, MoreFun, New POS Technology, Newland, Nexgo (Xinguodu), PAX Global Technology, Paytm, Shenzhou Anfu, Sunmi, Sunyard, Tianyu, Vanstone (Aisino), Verifone, XC Tech, YZ Intelligence Tech, Others
Region	China, Europe, India, Latin America, Middle East Africa, North America, Rest of Asia
Product Category	Mobile POS (mPOS), SmartECR, SmartPOS, Unattended POS
Cellular Technology	Non Cellular, 2G, 3G, 4G, 5G
Year	2022, 2023, 2024
Shipments	In millions units
Revenue	In \$ millions
Wholesale ASP	In \$

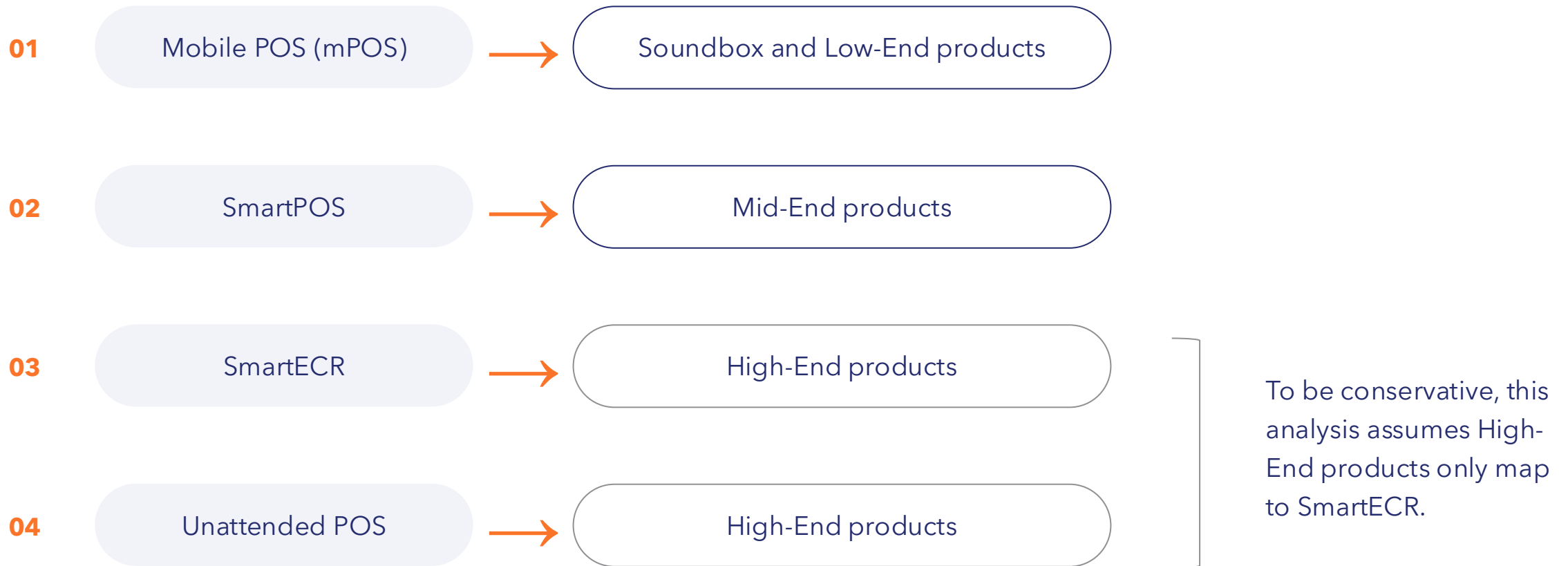
Data Limitations

Based on the available data, Sisvel's licensed product tiers (Soundbox, Low-End, Mid-End, High-End) are *not clearly mapped* to Counterpoint's product categories (Mobile POS (mPOS), SmartECR, SmartPOS, Unattended POS).

Sales data are only available *separately* by product category and cellular technology, but *not by combinations* of both.

Assumptions on Product Tier Mapping

Considering the limitations, Sisvel made the following assumptions in mapping Counterpoint product categories to Sisvel product categories:



Estimation of Prices by Category × Cellular

Product category and cellular technology datasets are combined using the shared variables of Brand, Region, and Year.

Mathematically, this analysis calculates shipments, revenue, and average price for the following variable combinations: Brand-Region-Year, Brand-Region-Year-Product Category, and Brand-Region-Year-Cellular Technology. Average price by Product Category and Cellular Technology is calculated by multiplying Brand-Region-Year-Product Category price by Brand-Region-Year-Cellular Technology price, divided by Brand-Region-Year price.

Aggregate Royalty

PRODUCT	SISVEL POOL ROYALTY (€)	SISVEL POOL ROYALTY (\$)	AGGREGATED ROYALTY	AVERAGE PRICE	AGGREGATED ROYALTY RATE
Soundbox	€1.20	\$1.39	\$2.77	\$94.84	2.9%
Low-End	€2.00	\$2.31	\$4.62	\$94.84	4.9%
Mid-End	€5.00	\$5.78	\$11.56	\$119.95	9.6%
High-End	€8.00	\$9.25	\$18.49	\$281.28	6.6%

Notes: Publicly available information suggests that the actual sales prices of POS devices can be appreciably higher than the estimates provided above. For example, a handheld cellular PAX S90 device marketed to be used in restaurants / retail stores can be sold at \$131 per unit (see <https://manualzz.com/doc/54736351/pax-s90-setup-manual>, <https://www.volza.com/p/termination-box/export/hsn-code-8470/>); a handheld cellular PAX S920 device marketed to be used in restaurants / retail stores can be sold at \$269 per unit (see <https://shop.emerchantauthority.com/products/pax-s920-flexible-mobile-pos-terminal>); a Castles UPT1000F cellular module marketed to be incorporated into automated vending machines can be sold at \$350 per unit (see https://castlestech.com/wp-content/uploads/2023/07/U1F_Brochure_20231222.pdf, <https://opendevelopment.verizonwireless.com/device-showcase/device/25200>); an Ingenico Self 2000 modular cellular device marketed to be incorporated into automated vending machines or self-service kiosks can be sold at \$383 per unit (see https://ingenico.com/sites/default/files/resource-document/2023-10/SELF%202000%20datasheet_SEPT23.pdf, <https://www.ucp-inc.com/product-page/self-2000>); a hand held cellular Dejavoo Z9 device marketed to be used in restaurants / retail stores can be sold at \$449 per unit (see https://dejavoo.io/wp-content/uploads/2025/09/Dejavoo-Hardware-Linux_Z9_09_25.pdf, <https://dejavoo.io/resource-center/emv-restaurant-z9-z11-linux-terminals><https://img1.wsimg.com/blobby/go/f2ac43e8-2b87-47a8-b0d7-e188eeb3690f/WPI%20Equipment%20Pricing%2007.2024%20.xlsx%20-%20Google%20S.pdf>).

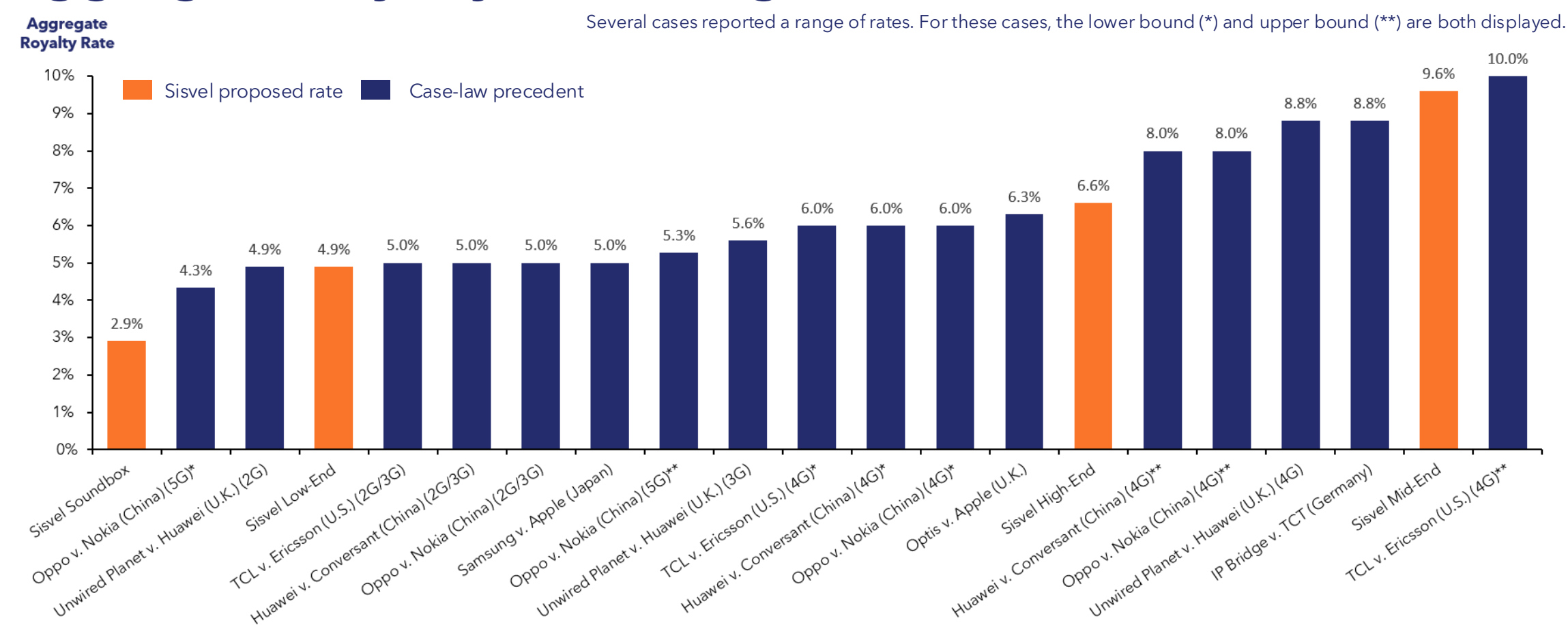
Aggregate Royalty Precedents

Besides the Sisvel POS patent pool here, I am not aware of existing publicly accessible license(s) of cellular communications standard essential patents for POS devices.

Accordingly, I have searched for court precedents, in general, on aggregate royalty burden for cellular communications standard essential patents.

I identified a set of court decisions, each involving cellular communications standard essential patent royalties for mobile phones, and assessed how Sisvel's royalties compare with the royalty precedents in those decisions.

Aggregate Royalty Rate Range



As demonstrated by the range of aggregate royalty burdens adopted in a wide variety of FRAND court precedents, the rates proposed by Sisvel are within the FRAND range

Aggregate Royalty Precedents (Continued)

Using the aggregate royalty rate (“ARR”) from court decisions to support a FRAND analysis in a different industry can require considering the royalty base of that ARR.

There are different perspectives as to whether (and to what extent) ARRs should vary between device categories.

To reflect these different perspectives, I also calculated the implied per-unit aggregate royalty burdens (“ARB”) from the range of FRAND rate determinations by various courts.

Aggregate Royalty Burden Range

■ Sisvel proposed rate
 ■ Case-law precedent

