



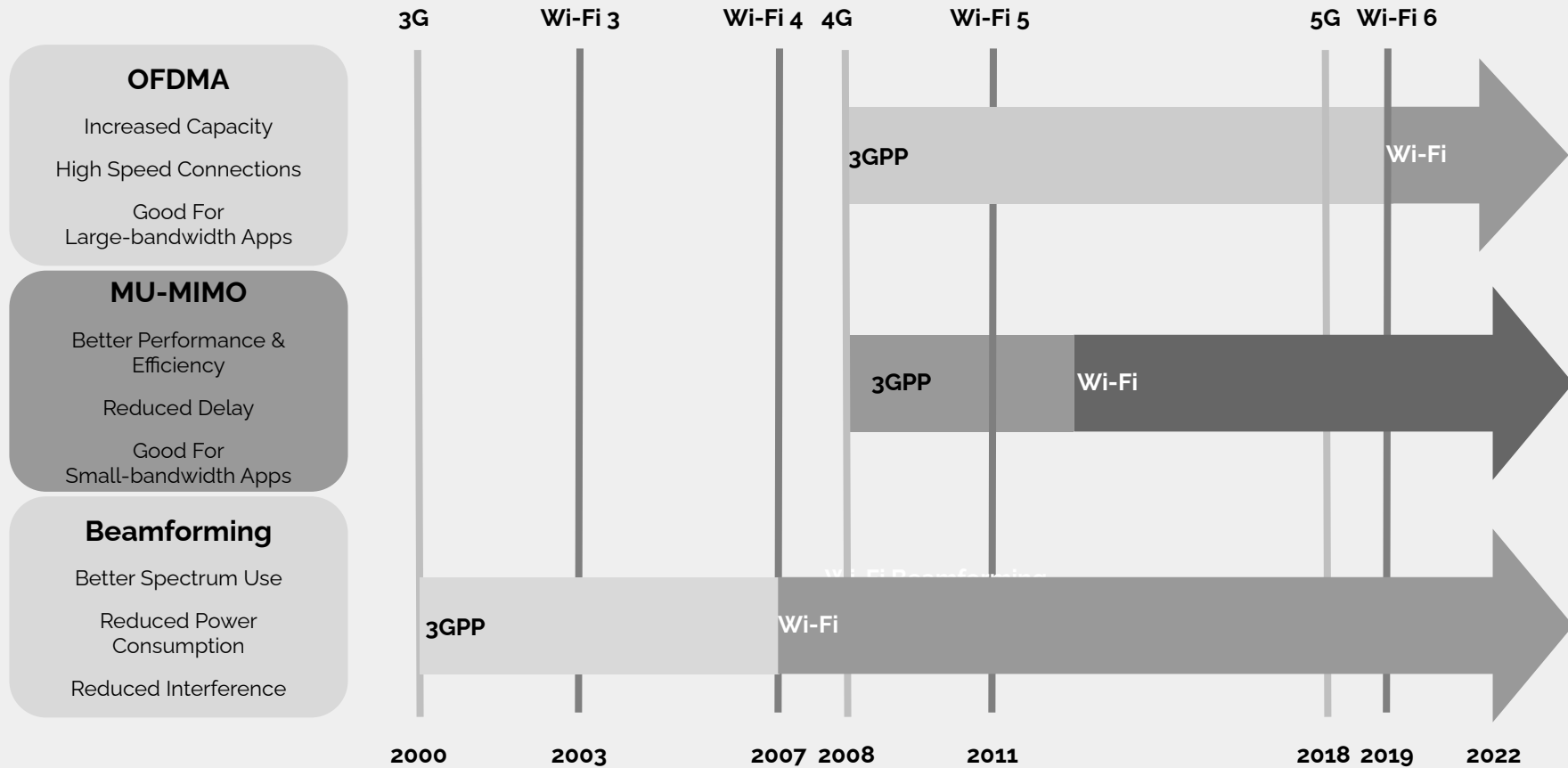
Wi-Fi Economic Report

November 15, 2023

Proprietary



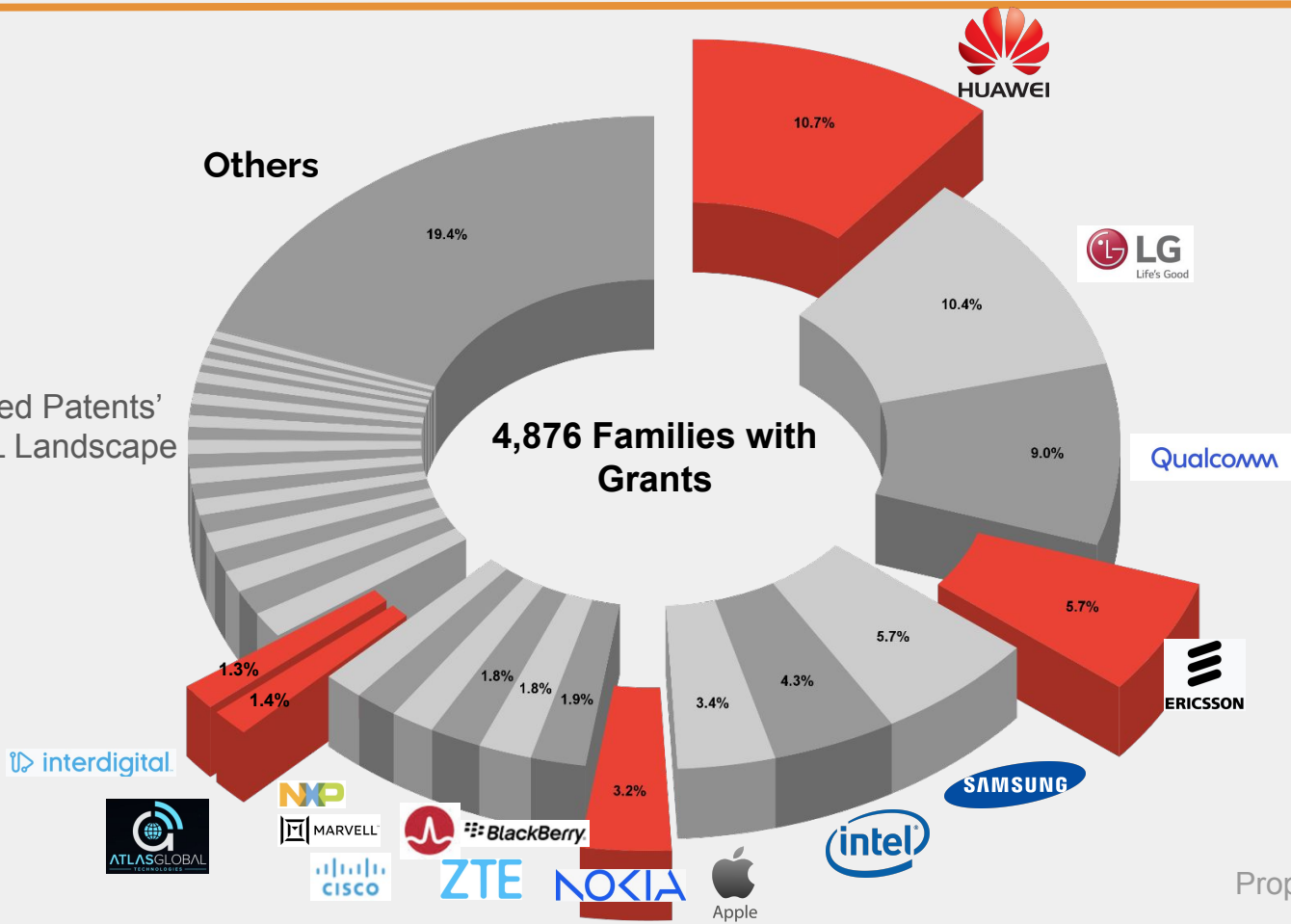
Wi-Fi 6 Adopted 3GPP Cellular Technologies





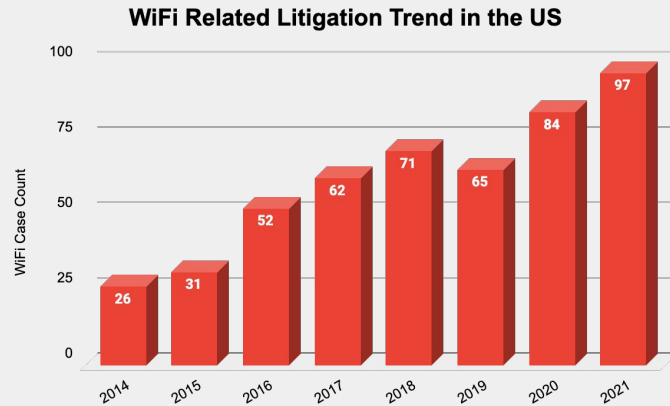
Aggressive Licensors Hold 22% of Potential Wi-Fi 6 SEPs

Source: Unified Patents' Wi-Fi 6 OPAL Landscape





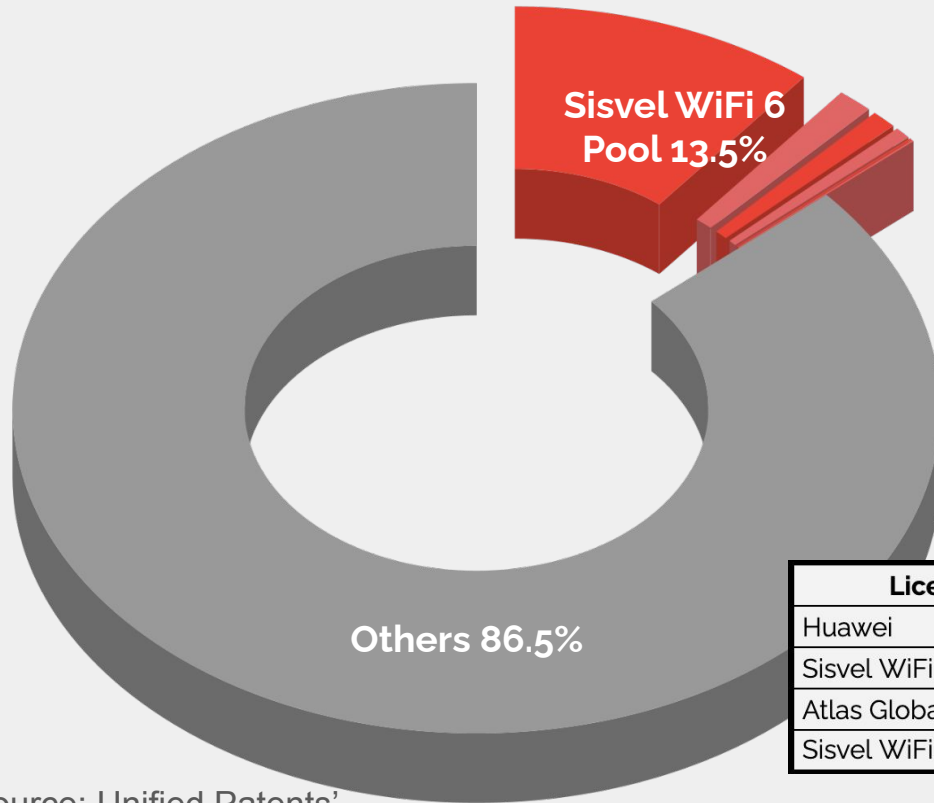
Near 18% Yearly Increase in Wi-Fi Litigation



Plaintiff	Defendants	Filed	Status
CalTech	Broadcom, Apple, Samsung, MSFT, Dell, Dish, Hughes	2019	\$1.1B Decision
Nokia	Oppo, OnePlus	2020	Infringement
NTT	Acer, TI, Mediatek	2020	Settled
WSOU	NetGear, TP-Link, NEC	2021	Settled
BE Labs	Verizon, Cox, Fujitsu, Asus, Commscope, Belkin, Cambium	2021	Settled
Castlemorton	Arista, Cox, Ubiquity, T-Mobile, Comcast, Altice, Polycom, Intel	2021	Settled
Huawei	NetGear, AVM, Amazon	2022	Open
Atlas Global	Samsung, Asus, Dell, Acer, HP, DLink, OnePlus, TP-Link, Sercom, Arcadyn	2021	\$37M Decision, \$50M Settlement, Others Open
Panasonic	Broadcom	2022	Settled
Wilus	Acer	2023	Open
AX Wireless	HP, Acer, Lenovo, Dell	2022	Open



Sisvel Wi-Fi 6 Pool Rate Leads to a \$4.44 Client Stack



Sisvel Wi-Fi 6 Pool Shares

- Huawei 79.2%
- Mediatek 9.3%
- Panasonic 6.7%
- SK Telecom/Wilus 4.3%
- Philips 0.6%
- Mitsubishi 0.6%

Stack Outcomes

Licensor	SEP Share	Portfolio Rate	Stack Rate
Huawei	10.71%	\$0.50	\$4.67
Sisvel WiFi 6 Pool Client	13.52%	\$0.60	\$4.44
Atlas Global - Samsung	2.73%	\$0.01	\$0.48
Sisvel WiFi 6 Pool AP	13.52%	\$3.60	\$26.63

Source: Unified Patents'
Wi-Fi 6 OPAL Landscape



\$0.04-0.69 Stack Value Per 5 Capability Requirement Sets

Unified commissioned Brattle to calculate value of full capability Wi-Fi SEP stack

- One rate for all Wi-Fi generations

Considered:

- Court cases, eg. Innovatio
- Public licenses, eg. Atlas Global
- Pools
- Interviews

3 economic methodologies:

- Alternative Offer Bargain
- Comparable License
- Reverse Apportionment

Unified OPAL Analytics used to identify landscape

Downlink (Mbps)	Latency (ms)	TWT	Device Examples
<1	>100	No	Sensors, Printers, Meters, other Plugged-In IoT Devices
<1	>100	Yes	Sensors, Meters, Other Battery-Powered IoT Devices
>1	<100	No	Gaming and VR Consoles, Cameras, Automobiles, TVs, Medical Devices
>1	<100	Yes	Mobile Phones, Laptops, Video Calling Devices, HD Video Streaming Devices
>1	<100	Yes	Consumer and Enterprise Access Points



Adjusting for Value Distribution Drops Royalty Shares

- 10% of Portfolio accounts for 54% of Value
- Forward Citations adjusted for CPC class and issuance year used to allocate value across portfolio

Patent Holder	Share of Families with Active Grants Scoring ≥ 60	Share of Adjusted Forward Citation Score for Active Grants Scoring ≥ 60
Huawei	10.72%	4.36%
LG	10.35%	7.97%
Qualcomm	8.73%	7.22%
Ericsson	5.71%	2.66%
Samsung	5.69%	3.29%
Intel	4.33%	2.30%
Apple	3.39%	2.19%
Nokia	3.14%	1.06%
Atlas Global	1.36%	2.73%
Interdigital	1.29%	1.38%
Captured Universe	54.72%	35.17%



Atlas Global - Samsung License Results in \$0.48 Stack

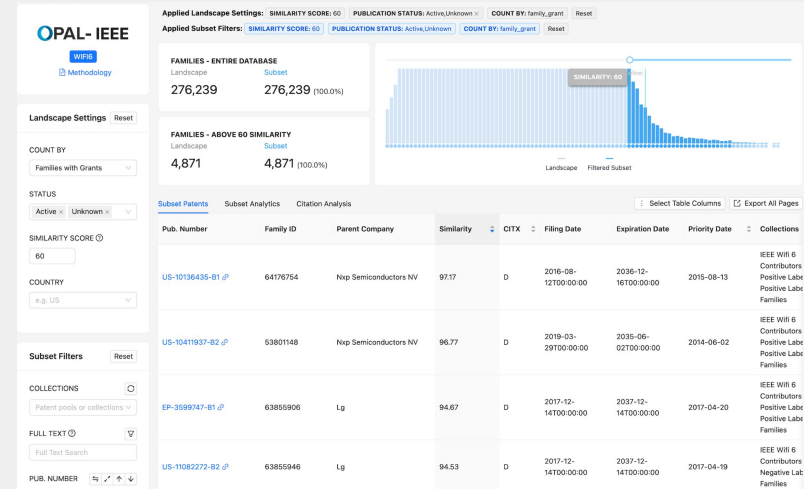
Atlas Global (Acacia Subsidiary) granted Samsung in 4Q2021 Paid-Up License for Wi-Fi, including Wi-Fi 6/6E

- Newracom assigned Wi-Fi SEPs to Atlas Global
 - Top 6 contributor to Wi-Fi 6 Standardization
 - OPAL identified 64 SEP Grant Families
 - High quality based on Forward Citations: numerical share of universe is 1.36% but 2.73% when adjusted using Forward Citations
- Paid-Up license estimated at \$50M per Acacia 10-K
- Results in \$0.48 stack for Wi-Fi, including TWT



Unified Patents' OPAL Analytics Identifies the Universe

- 3,000 patent families manually evaluated by experts to create training set - 1,000+ found essential
- 3.6M patents scored for statistical essentiality based on semantic similarity to training set
- Landscape is searchable using patent or application number, family ID, filing date, priority date, expiration date, CPC code, country, assignee, parent, status, etc.
- Full text search
- Methodology



OPAL: https://portal.unifiedpatents.com/standards/opal/wifi6/v1?alpha_threshold=60&count_by=family_grant&full_text=%22Target+Wake+Time%22+%7C+TWT&pub_status=Active&pub_status=Unknown

OPEN: https://portal.unifiedpatents.com/standards/open/ieee?full_text=target+wake+time&standard=802.11&wgroup=Tgax&wgroup=wgbe&wgroup=Tgbe&wgroup=Hew+Sg&wgroup=Tgah&wgroup=fgah



Thank You for Your Interest

If you have any questions or wish to see a demo of how our tools can help in negotiations, please contact either of us below to continue the discussion.

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