

Patent Licensing Companies in the Semiconductor Market

Patent Litigation Risk and Potential Targets

The semiconductor industry has all the attributes that appeal to patent licensing companies (PLCs): *Are you in their sights?*



REPORT OUTLINE

- Patent Licensing Companies in the Semiconductor Market: Patent Litigation Risk and Potential Targets
- February 2017
- Ref.: KM17002
- PDF (100+ slides)
- €5,990 (Multi-user license)

KEY FEATURES OF THE REPORT

- **Ranking of PLCs** according to their recent patent acquisitions in the semiconductor field
- **Dynamics** of patent acquisitions and **patented technology** including memory, transistor, sensor, manufacturing and packaging
- **Expected expiration date** of patents and **remaining lifetime** of PLCs' patent portfolios
- **Dynamics of US patent litigation** filed by PLCs in the semiconductor market and more broadly
- Details on the **latest patent litigation filed by PLC in the semiconductor field**, including defendants, accused products and current status of the litigation cases
- **Aggressiveness** of PLCs in the semiconductor market and more broadly
- **Litigation risk assessment** from PLCs and **potential targeted companies** in the semiconductor field
- **IP profiles** of main PLCs

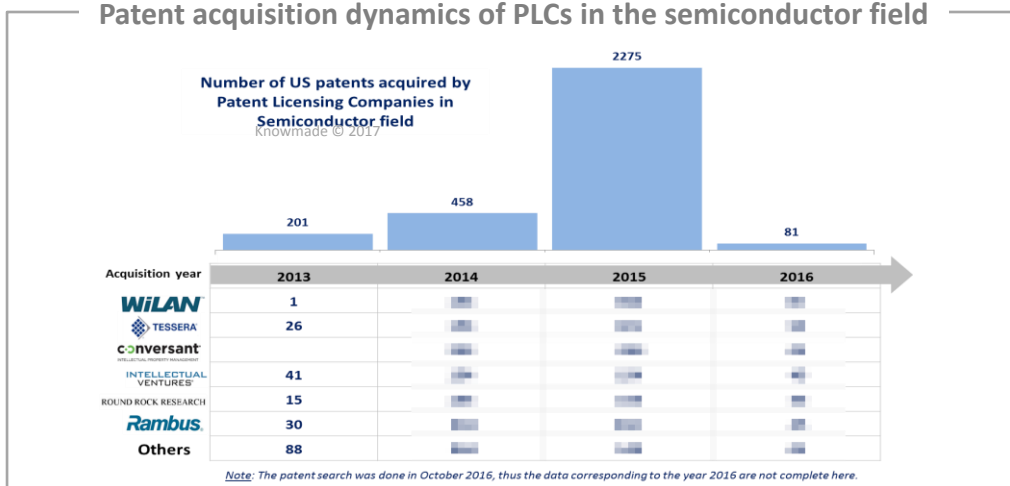
PLCs WILL INCREASINGLY EXTRACT CASH FROM THE SEMICONDUCTOR INDUSTRY

Patent Licensing Companies (PLCs) are non-operating companies concentrated on creating the majority of their income from licensing patents to or litigating against operating companies suspected to infringe their patent rights. Other related terms include non-practicing entities (NPEs), patent holding companies (PHCs), patent monetization entities (PMEs), patent assertion entities (PAEs) and Patent Trolls. PLCs commonly acquire their patents from other companies, and then monetize them via aggressive patent litigation. Some PLCs have R&D activities in order to generate their own patents, and they monetize them by licensing.

The RPX Corporation's March 2015 report states that "NPEs cost operating companies an estimated \$12.2 billion in both legal fees and other legal costs and settlement or judgment amounts in 2014". Patent Licensing Companies operate in fields with high probability of patent infringement, mainly in USA, where litigation damages are much higher than in Europe or Asia. In a patent infringement action, the potential sales volume plays a major role for assessing the damage award. Thus, the PLCs come into action when the market has reached a critical size and target companies have made irreversible investments.

Patent litigation risk tends to increase as new technologies emerge, or as existing technologies combine to create new products and services. The convergence of technologies in the semiconductor field leads to an increase in patent litigation in that sector. The semiconductor industry brings together all ingredients to appeal to PLCs. These include strong consolidation, with many mergers and acquisitions (M&A), numerous patents for sale from bankrupt companies and M&A, complex patented inventions, the colossal amount of products embedding semiconductor devices, big companies, and a lot of money. All companies designing, manufacturing or marketing semiconductor-based products are potential targets for PLCs' next patent litigation.

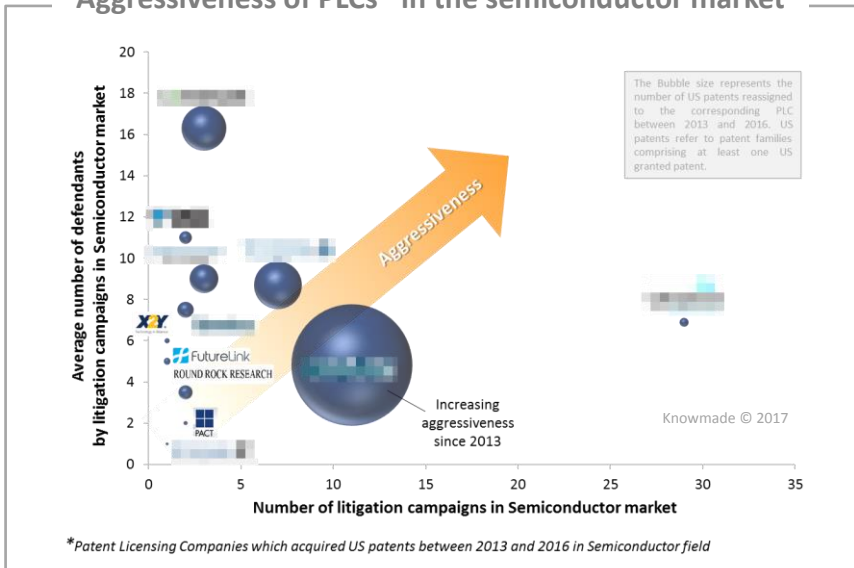
Patent acquisition dynamics of PLCs in the semiconductor field



In this report we reveal the most aggressive Patent Licensing Companies in the semiconductor field, their recent patent acquisitions, and their potential targets for future patent litigation. More than 2,880 semiconductor-related US patents have been acquired by PLCs since 2013. Now, it is a critical time to assess the patent litigation risks and know the potential targets related to these recent patent acquisitions:

- Which PLCs recently acquired semiconductor-related patents?
- Which PLCs represent the biggest threat for operating companies?
- Which products and which companies have already been involved in patent litigation with PLCs in the semiconductor field?
- Which companies are potential targets for PLCs?
- How can operating companies deal with the PLC threat?

Aggressiveness of PLCs* in the semiconductor market



AGGRESSIVENESS AND LITIGATION RISKS FROM PATENT LICENSING COMPANIES

This report provides an in-depth analysis of patent litigation filed by PLCs involved in the semiconductor field, including the dynamics of US patent litigation, defendants, accused products and the current status of the litigation cases.

We have evaluated both the aggressiveness and the litigation risk from each PLC. According to our analysis, seven PLCs may be considered as major threats to practicing companies involved in the semiconductor market: WiLAN, Acacia Research, Conversant IP Management, Intellectual Ventures, Rambus, Round Rock Research and Tessera. Some of them have shown strong patent enforcement activity since 2014, and they will continue to aggressively enforce their patents against semiconductor players over the next few years.

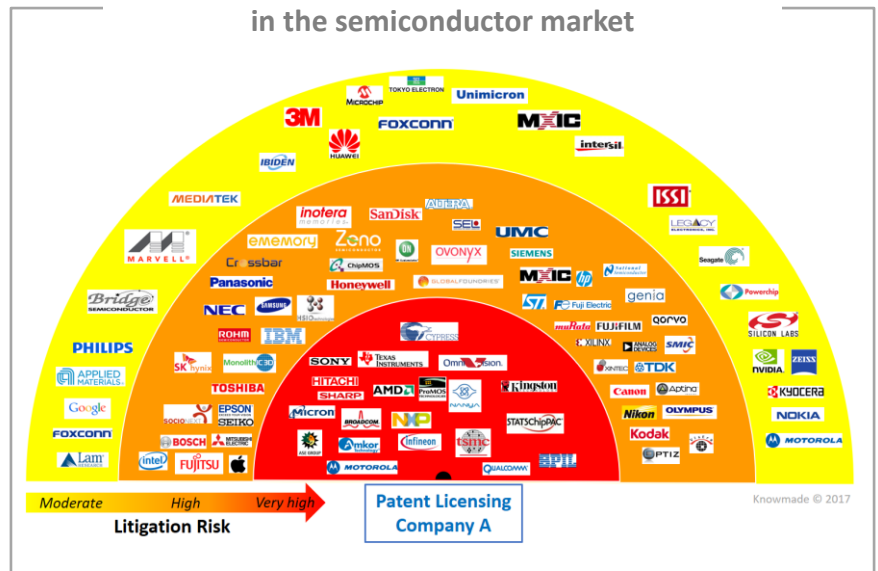
IDENTIFY POTENTIAL TARGETED COMPANIES

Many industrial companies at every level of the semiconductor supply chain, including integrated device manufacturers, outsourced semiconductor assembly and test companies, and equipment and material suppliers are potential targets for Patent Licensing Companies.

For each PLC, we provide a detailed IP profile of their recent patent acquisitions in the semiconductor field, including:

- Patent acquisition dynamics
- Patented technologies, including memory, transistor, sensor, radio frequency and power devices, manufacturing, and packaging
- Remaining lifetime of the patent portfolio
- Latest patent litigation, including which companies have been sued for patent infringement, accused products and current status
- Potential targets by technical segment: the main companies facing the highest risk of patent litigation regarding patents owned by the PLC.

Potential targets of Patent Licensing Company A in the semiconductor market



COMPANIES MENTIONED IN THE REPORT (NON-EXHAUSTIVE)

Acacia Research, Conversant IP Management, DSS Technology Management, Future Link Systems, Intellectual Ventures, Mosaid, PACT XPP Technologies, Rambus, Round Rock Research, Tessera, WiLAN, X2Y Attenuators

3M, Advanced Micro Devices, Advanced Semiconductor Engineering, Alpha & Omega Semiconductor, Altera, American PCS Communications, Amkor Technology, Analog Devices, Aplus Flash Technology, Apple, Applied Materials, Aptina Imaging, AT&T, Attopsemi Technology, AU Optronics, Avalanche Technology, BlackBerry, BOE Technology, Bridge Semiconductor, Broadcom, Canon, Carl Zeiss, Chipmos Technologies, Cisco Systems, Citizen Electronics, Cordis, Cree, Crocus Technology, Crossbar, Cypress Semiconductor, Dell, Denso, Dongbu Electronics, Dongbu Hitek, Eldipa Memory, Emcore, Ememory Technology, Epistar, Ericsson, Everspin, Foxconn, Fuji Electric, Fujifilm, Fujitsu, Freescale, Genia Technologies, Global OLED Technology, Globalfoundries, Google, Greatbatch, Guardian Industries, Hewlett Packard, Hitachi, Honeywell, HSIO Technologies, Huawei Technologies, Ibiden, IBM, Infineon Technologies, Innolux, Innovative Silicon ISI, Inotera Memories, Intel, Interdigital Technology, Intersil, Intuitive Surgical, Invensense, Kingston Technology, KLA Tencor, Kodak, Kyocera, Lam Research, Lattice Semiconductor, Legacy Electronics, Lexmark International, LG, Alcatel-Lucent, Macronix International, Marvell, Mediatek, Micron Technology, Microsemi, Mitsubishi Electric, Molecular Imprints, Monolithic 3D, Motorola, Murata Manufacturing, Nanometrics, Nantero, Nanya Technology, National Semiconductor, NEC, Nikon, Nokia, Nvidia, NXP, OEP Imaging, Olympus, Omnivision Technologies, Optiz, Osram, Ovonyx Memory Technology, Panasonic, Pelican Imaging, Philips, Pixart Imaging, PolyIC, Power Integrations, Powerchip Technology, Promos Technologies, Qorvo, Qualcomm, Quarkstar, Raytheon, Renesas Electronics, Ricoh, Robert Bosch, Rohm, Samsung Electronics, Sandisk, Seagate Technology, Seiko Epson, Semiconductor Energy Laboratory, Semiconductor Manufacturing International, Sharp, Siemens, Silicon Laboratories, Microchip, SK Hynix, Socionext, Sony, SPIL, STMicroelectronics, STATS ChipPAC, Taiwan Semiconductor Manufacturing (TSMC), Tarana Wireless, TDK, Tela Innovations, Texas Instruments, Tokyo Electron, Toshiba, Unimicron Technology, UMC, United Technologies, Universal Display, Verizon, Visera Technologies, Vishay, Xerox, Xilinx, Xintec, Zeno Semiconductor, Zink

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AUTHORS



Dr Fleur Thissandier works for Knowmade in the field of Microelectronics and Chemistry. She holds a PhD in Chemistry of Materials and Electrochemistry from CEA/INAC, Grenoble, France. She also holds a Chemistry and Engineering Degree from the Superior National School of Chemistry (ENSCM), Montpellier, France
fleur.thissandier@knowmade.fr



Dr Audrey Bastard works for Knowmade in the field of Microelectronics and Compound Semiconductors. She holds a PhD in Physics from National Polytechnic Institute of Grenoble, France in collaboration with STMicroelectronics, CEA-Leti and CEMES Toulouse. She also holds a Materials Engineering Degree from the Superior Engineering School of Luminy, Marseille, France.
audrey.bastard@knowmade.fr



Dr Nicolas Baron is CEO and co-founder of Knowmade. He leads the Physics Department. He holds a PhD in Physics from the University of Nice Sophia-Antipolis, and a Master of Intellectual Property Strategies and Innovation from the European Institute for Enterprise and Intellectual Property (IEEPI Strasbourg), France.
nicolas.baron@knowmade.fr

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Signature:

TERMS AND CONDITIONS OF SALES

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“Acceptance”: Action by which the Buyer accepts the terms and conditions of sale in their entirety. It is done by signing the purchase order which mentions “I hereby accept Knowmade’s Terms and Conditions of Sale”.

“Buyer”: Any business user (i.e. any person acting in the course of its business activities, for its business needs) entering into the following general conditions to the exclusion of consumers acting in their personal interests.

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“Intellectual Property Rights” (“IPR”) means any rights held by the Seller in its Products, including any patents, trademarks, registered models, designs, copyrights, inventions, commercial secrets and know-how, technical information, company or trading names and any other intellectual property rights or similar in any part of the world, notwithstanding the fact that they have been registered or not and including any pending registration of one of the above mentioned rights.

“License”: For the reports and databases, 2 different licenses are proposed. The buyer has to choose one license:

1. Single user license: a single individual at the company can use the report.
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“Products”: Reports are established in PowerPoint and delivered on a PDF format and the database may include Excel files.

“Seller”: Based in Sophia Antipolis (France headquarters), Knowmade is a technology intelligence company specialized in the research and analysis of scientific and technical information. We provide patent landscapes and scientific state of the art with high added value to businesses and research laboratories. Our intelligence digests play a key role to define your innovation and development strategy.

1. Scope

1.1 The Contracting Parties undertake to observe the following general conditions when agreed by the Buyer and the Seller. ANY ADDITIONAL, DIFFERENT, OR CONFLICTING TERMS AND CONDITIONS IN ANY OTHER DOCUMENTS ISSUED BY THE BUYER AT ANY TIME ARE HEREBY OBJECTED TO BY THE SELLER, SHALL BE WHOLLY INAPPLICABLE TO ANY SALE MADE HEREUNDER AND SHALL NOT BE BINDING IN ANY WAY ON THE SELLER.

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1.3 Orders are deemed to be accepted only upon written acceptance and confirmation by the Seller, within [7 days] from the date of order, to be sent either by email or to the Buyer’s address. In the absence of any confirmation in writing, orders shall be deemed to have been accepted.

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- within [1] month from the order for Products already released; or
- within a reasonable time for Products ordered prior to their effective release. In this case, the Seller shall use its best endeavours to inform the Buyer of an indicative release date and the evolution of the work in progress.

2.2 Some weeks prior to the release date the Seller can propose a pre-release discount to the Buyer.

The Seller shall by no means be responsible for any delay in respect of article 2.2 above, and including in cases where a new event or access to new contradictory information would require for the analyst extra time to compute or compare the data in order to enable the Seller to deliver a high quality Products.

2.3 The mailing of the Product will occur only upon payment by the Buyer, in accordance with the conditions contained in article 3.

2.4 The mailing is operated through electronic means either by email via the sales department. If the Product’s electronic delivery format is defective, the Seller undertakes to replace it at no charge to the Buyer provided that it is informed of the defective formatting within 90 days from the date of the original download or receipt of the Product.

2.5 The person receiving the Products on behalf of the Buyer shall immediately verify the quality of the Products and their conformity to the order. Any claim for apparent defects or for non-conformity shall be sent in writing to the Seller within 8 days of receipt of the Products. For this purpose, the Buyer agrees to produce sufficient evidence of such defects.

2.6 No return of Products shall be accepted without prior information to the Seller, even in case of delayed delivery. Any Product returned to the Seller without providing prior information to the Seller as required under article 2.5 shall remain at the Buyer’s risk.

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BIC or SWIFT code: CCBPFRPPNCE

IBAN: : FR76 1560 7000 6360 6214 5695 126

To ensure the payments, the Seller reserves the right to request down payments from the Buyer. In this case, the need of down payments will be mentioned on the order.

3.3 Payment is due by the Buyer to the Seller within 30 days from invoice date, except in the case of a particular written agreement. If the Buyer fails to pay within this time and fails to contact the Seller, the latter shall be entitled to invoice interest in arrears based on the annual rate Refi of the «BCE» + 7 points, in accordance with article L. 441-6 of the French Commercial Code. Our publications (report, database, tool...) are delivered only after reception of the payment.

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4.2 The Seller shall only be liable for (i) direct and (ii) foreseeable pecuniary loss, caused by the Products or arising from a material breach of this agreement

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b) any claim attributable to errors, omissions or other inaccuracies in the Product or interpretations thereof.

4.4 All the information contained in the Products has been obtained from sources believed to be reliable. The Seller does not warrant the accuracy, completeness adequacy or reliability of such information, which cannot be guaranteed to be free from errors.

4.5 All the Products that the Seller sells may, upon prior notice to the Buyer from time to time be modified by or substituted with similar Products meeting the needs of the Buyer. This modification shall not lead to the liability of the Seller, provided that the Seller ensures the substituted Product is similar to the Product initially ordered.

4.6 In the case where, after inspection, it is acknowledged that the Products contain defects, the Seller undertakes to replace the defective products as far as the supplies allow and without indemnities or compensation of any kind for labor costs, delays, loss caused or any other reason. The replacement is guaranteed for a maximum of two months starting from the delivery date. Any replacement is excluded for any event as set out in article 5 below.

4.7 The deadlines that the Seller is asked to state for the mailing of the Products are given for information only and are not guaranteed. If such deadlines are not met, it shall not lead to any damages or cancellation of the orders, except for non-acceptable delays exceeding [4] months from the stated deadline, without information from the Seller. In such case only, the Buyer shall be entitled to ask for a reimbursement of its first down payment to the exclusion of any further damages.

4.8 The Seller does not make any warranties, express or implied, including, without limitation, those of saleability and fitness for a particular purpose, with respect to the Products. Although the Seller shall take reasonable steps to screen Products for infection of viruses, worms, Trojan horses or other codes containing contaminating or destructive properties before making the Products available, the Seller cannot guarantee that any Product will be free from infection.

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