MEMS Microphone

Knowles, STMicroelectronics/OMRON, AAC Technologies/Infineon Technologies, InvenSense/Analogue Devices

Market growth, challenged leader: patent battle can start

NOW IT’S TIME FOR PATENT BATTLE IN MEMS MICROPHONE BUSINESS

The MEMS Microphone will remain one of the fastest growing MEMS components due to existing and new opportunities. According to Yole Développement, the market will grow from $785M in 2013 to $1.65B by 2019. Shipments are expected to grow from 2.4B in 2013 to 6.6B units in 2019 which points to a market filled with opportunities for existing new players. Knowles is the dominant player with 61% market shares in 2013 and 58% in 2014. A decrease is again expected in the next years with new challengers entering the market: STMicroelectronics, OMRON, AAC Technologies, Infineon Technologies and InvenSense/Analogue Devices.

The global market share of these 6 players account for more than 80% of MEMS Microphone market in 2014. These players are all developing innovative technical and manufacturing solutions and, in parallel of course, the right patents to protect their inventions.

In a patent infringement action, the potential sales volume plays a major role for assessing the damage award. Thereby, this study is naturally focused on the last MEMS Microphone components supplied by these market leaders and challengers: Knowles (S1157, iPhone 5S/6), ST/OMRON (MP45DT01), AAC/Infineon (SR595, iPhone 5S/6), InvenSense/AD (ICS-43432).

This raises interesting questions: What are the similarities and the differences in term of technical and manufacturing choices at the devices level? What is the related patent situation? Knowmade (specialized in patent analysis) and System Plus Consulting (specialized in reverse engineering and reverse costing) are joining their unique added value in order to combined technology and manufacturing analysis with patent claims understanding to highlight the risks of patent infringement between Knowles, STMicroelectronics, OMRON, AAC Technologies, Infineon Technologies, Analog Devices and InvenSense in the field of MEMS Microphone. As the MEMS Microphone market is growing very fast, it is the right time now to understand what could happen between these companies and how to differentiate patents and claims compared to the other players.

This report provides an overview of technology data and manufacturing process of S1157, MP45DT01, SR595 and ICS-43432 MEMS Microphone components.

A comparative study of the technology and manufacturing process of these MEMS Microphone components has been performed in order to highlight the technical similarities and differences of the product features.

REPORT OUTLINE

• Technology and patent infringement risk analysis of MEMS Microphones S1157 (Knowles), MP45DT01 (STMicroelectronics), SR595 (AAC/Infineon) and ICS-43432 (InvenSense/Analogue Devices)
• April 2015
• PDF & Excel file
• 170+ slides
• €5,990

KEY FEATURES OF THE REPORT

• Deep insight on technology data and manufacturing processes
• Comparative studies of product features (similarities & differences)
• Key patents related to the target product features per company
• Cross analysis of potential patent infringement risks
• Excel database with all patents analyzed in the report

OBJECTIVES OF THE REPORT

• Find the technical and manufacturing process similarities and differences of S1157, MP45DT01, SR595 and ICS-43432 MEMS Microphones.
• Identify key patents held by Knowles, STMicroelectronics, OMRON, AAC Technologies, Infineon Technologies, Analog Devices and InvenSense, and related to the target product features.
• Find the link between patented technological solutions and marketed products.
• Discover the potential infringing parties and help to find evidence of use.
• Understand potential risks of patent infringement and identify the patents which require a more in depth legal assessment.

RELATED REPORTS

• MEMS Microphone: Market, Applications and Business Trends 2014.
• InvenSense ICS-43432 Digital MEMS Microphone.
• iPhone 5S MEMS Microphones Knowles & AAC Technologies.
A LINK BETWEEN PRODUCT AND PATENT

A set of product features, mainly related to the MEMS Microphone die, has been selected regarding their interest in terms of patent study:

- Design: Acoustic Hole Shape, Transducer Number & Shape, Stress Relief.
- Packaging: Port Structure, Metal/PCB Housing, Embedded Capacitance, RF Protection.

Key patents held by Knowles, STMicroelectronics, OMRON, AAC Technologies, Infineon Technologies, Analog Devices and InvenSense related to these technology features have been identified.

For each product feature, the links between the patented technologies and the target product have been established.

Risk of patent infringement

The potential infringing parties of the target product have been identified. The contents of patents have been compared with actual technological solutions used in the marketed target products Knowles (S1157), ST/OMRON (MP45DT01), AAC/Infineon (SR595), InvenSense/ADI (ICS-43432), in order to highlight, for each MEMS Microphone component, the potential risks of patent infringement and related patents requiring more in-depth legal assessments. This report provides discussions on the potential risks of patent infringement by comparing relevant patent claim elements to the target product features.

We have identified several potential risks of patent infringements in some technology features from target products S1157, MP45DT01, SR595 and ICS-43432. Key patents requiring more in-depth legal assessment have been identified.

AN USEFUL PATENT DATABASE

The report also includes an Excel database with all patents analyzed in the report (240+ patent families composed of 650+ patents)

This database allows multi-criteria searches and includes:

- Patent publication number
- Hyperlinks to the original documents
- Priority date
- Title
- Abstract
- Applicants
- Legal status for each patent

Take the benefits of KnowMade and System Plus Consulting combined added value for highlighting potential risks of patent infringement.
MEMS Microphone Technology and Patent Infringement Risk Analysis – April 2015

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Headquartered in Sophia Antipolis, France, Knowmade is specialized in analysis of patents and scientific research findings. We provide Patent Search, IP landscape, Patent Analysis, Scientific Literature Landscape, State of the art, Technology Scouting, Technology Transfer and Technology Tracking. Our service offer consists of custom studies, analysis reports, on-demand tracking and strategy consulting. Knowmade combines information search services, scientific expertise, powerful analytics and visualization tools, and proprietary methodologies for analyzing patents and scientific information. With a solid focus on Microelectronics, Compound Semiconductors, LED, MEMS, Nanotechnology and Biotechnology, Knowmade supports research laboratories, industrial companies and investors in their business development.

ABOUT SYSTEM PLUS CONSULTING (http://www.systemplus.fr)
Headquartered in Nantes, France, System Plus Consulting is specialized in technology and cost analysis of electronic components and systems in the fields of Integrated Circuits, Power Devices and Modules, MEMS & Sensors, LED, Image Sensors, Packaging including wafer level, Electronic Boards and Systems. The company offers custom reverse costing analyses, standard reverse costing reports and costing tools. These analyses are used by Purchasing Departments to measure their suppliers’ cost structure, R&D Departments to confirm technological choices depending on their impact on costs, and Benchmarking/Marketing Departments to monitor the products on the market.
ORDER FORM

MEMS Microphone
Technology and Patent Infringement Risk Analysis
Knowles - STMicroelectronics - OMRON - AAC Technologies
- Infineon Technologies - InvenSense - Analog Devices
April 2015

SHIP TO

Name (Mr/Ms/Dr/Pr):
______________________________________
Job Title:
______________________________________
Company:
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“Products”:
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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.
1.2 This agreement becomes valid and enforceable between the Contracting Parties after clear and non-equivalent consent by any duly authorized person representing the Buyer. For these purposes, the Buyer accepts these conditions of sales when signing the purchase order which mentions “I hereby accept Knowmade’s Terms and Conditions of Sale”. This results in acceptance by the Buyer.
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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