 MEMS Microphone 2014

Multi-mic smartphones, tablets and emerging consumer applications keep making the market booming: reaching $1.65B by 2019...

REPORT SAMPLE
About the Author

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Report Objectives

• This report covers:
  – MEMS microphones
  – All types of applications:
    • Mobile phones
    • Tablets
    • Other consumer applications: Notebook, camera, camcorder…
    • Medical
    • Automotive and others

• The report objectives are:
  – To provide an update of the global MEMS microphone market – key market metrics & dynamics
    • 2013-2019 unit shipments and revenue by level of integration (3/6/9-axis)
    • Average selling price analysis and expected evolution
    • Market share for each level of integration
  – To describe main applications, focusing on key existing markets, and those that are emerging and showing the most promise
    • Functionalities provided, status in 2013, key players as well as global system trends
    • Emerging applications drivers, detection of new functionalities
  – To provide in-depth teardowns of current microphones used in main smart phones
    • Technology trends, packaging evolution
    • Teardown and reverse costing/engineering
  – To provide an in-depth analysis of the competitive landscape of the industry
    • Main players and their market share for each application
    • Recent M&A, new comers and disappearance
    • Emerging Chinese players
What’s new since 2011 for MEMS microphone business
What We Saw? What We Missed?

• Yole Développement has followed the consumer MEMS microphone market for many years and publishes reports on this topic regularly.

• Compared to the analysis performed in 2011:
  – We saw:
    • Huge adoption of MEMS microphones in all consumer applications, especially for smart phone and tablets
    • Rocketing growth of global MEMS microphone for consumer market
    • Aggressive price decrease because of high level competition
    • Medical, automotive and other markets are still in their infancy: not the focus of most players
    • Trends of integrating several microphones in one device to improve the performance
    • Big effort of manufacturers to make microphones smaller and more robust
    • Packaging patent disputes between main players (Knowles, AAC Technologies, Analog Devices…)
    • Dominant market place of Knowles with numerous emerging players all over the world
    • New business model, successful case of Infineon: supply of MEMS and ASIC dies to conventional microphone players
    • Arise of traditional ECM players in Asia
  – We missed:
    • Knowles lost its market share faster than expected
    • Audio hub to integrate several microphones in one device
    • Prices for high volumes decreased more sharply than expected
    • A larger amount of Chinese players appearing than expected because of the huge growth of Chinese smart phone market
Because of the price decrease, the market in value is growing more slowly than in volume. We believe it will grow from $785M to $1.65B by 2019.

- CAGR: 13%
Applications Overview

MEMS Microphones

- Consumer electronics
- Laptop / Notebook
- Cellphones / Smartphones
- IoT
- Automotive
- Medical
- Earphone handsets
Multi-Microphone Trend in Smartphones

Example: Evolution of iPhones

- iPhone 4S: 2 mics from AAC and Knowles
- iPhone 5: 3 mics from AAC Knowles and ADI
- iPhone 5S: 3 mics from AAC Knowles

iPhone 5 uses 3 MEMS microphones from Knowles, AAC Technologies and Analog Devices
- The primary microphone is used at the bottom of the phone to capture voice
- The second one is located on the back and used to cut out ambient noise and improve sound quality
- The third one (from ADI) is located beside the front camera in order to improve Siri’s (voice control) performance.
- Chipset from Audience for CAN

Iphone 5S uses also 3 MEMS microphones from Knowles and AAC Technologies

Multi-microphone trend brings out fiercer competition!
- When using 2 or more MEMS microphones in the cell phone, players prefer to buy them from different companies: it is always better to have a second source or a third source
  - Players are trying their best to reduce cost and improve performance to be differentiated from others
- At the chipset level (Audience, Wolfson…), competition could also increase
Knowles is Still Leader but Competition Intensifies
Global market share in 2013

Global MEMS Microphone Market Share in Value ($M) 2013

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Available MEMS Reports

- Uncooled Infrared Imaging Technology & Market Trends
- Emerging MEMS
- Status of the MEMS Industry
- MEMS for Cell Phones and Tablets
- Infrared Detectors Technology & Market Trends
- MEMS Pressure Sensor
- MEMS Front-End Manufacturing Trends
- Inertial MEMS Manufacturing Trends 2014
- RF Filters, PAs, Antenna Switches & Tunability for Cellular Handsets
- IMU & Gyro for Defense, Aerospace & Industrial
- Status of the CMOS Image Sensors
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- Motion Sensors for Consumer & Mobile applications
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- Thin Wafer Handling
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