



FOR IMMEDIATE RELEASE:

MEMS industry: RF is changing the game...

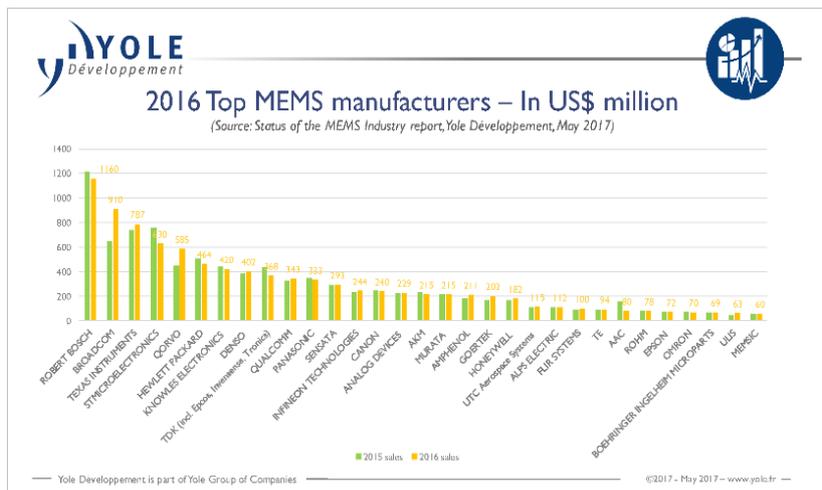
Status of the MEMS Industry report – Yole Développement

LYON, France – May 17, 2017: With the apparition of 4G and complexification leading to increasing demand for filters, RF is restructuring the MEMS industry. A new MEMS player has entered the Top 3: with US\$910 million in 2016, the US-based company Broadcom, [acquired by Avago Technologies in May 2015](#), has shifted from #4 in 2015 to #2 in 2016 with its MEMS filter activities.

[Yole Développement](#), part of the Yole Group, today released its annual MEMS manufacturer ranking. This analysis is based on 2016 revenues and is part of Yole’s MEMS & Sensors annual report, [Status of the MEMS Industry](#).

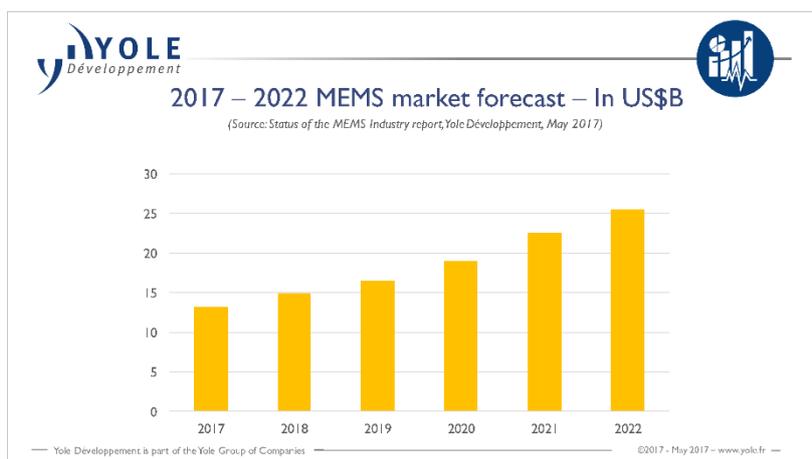
This year the ranking highlights the redirection of the MEMS industry towards RF applications: RF MEMS filters represent the largest MEMS growth with a 35% CAGR in US\$ between 2017 and 2022. “Beyond the development of these RF MEMS devices, the RF front-end demonstrated comfortable growth, at 14% CAGR during the same period¹,” comments **Claire Troadec, Activity Leader, RF Devices & Technologies from Yole**. Today, filters are the biggest business in the RF front-end industry.

Broadcom is not the only RF MEMS player to feature in the 2016 MEMS manufacturers ranking: Qorvo has also benefitted from the impressive RF front-end market growth. Therefore, its revenues rocketed from US\$145 million to US\$585 million in 3 years.



Within the total value of the first 30 MEMS companies to reach US\$9.35 billion in 2016 (compared to US\$9.2 in 2015 - +1.6% growth), Texas Instruments (TI) and Robert Bosch’s performances were identical to those of 2015. The MEMS leader, Robert Bosch, published US\$1.16 billion in turnover in 2016, mainly stemming from its automotive and consumer

¹ Source: [RF Front End Modules and Components for Cellphones 2017 report](#), Yole Développement, March 2017



activities. Indeed, the German-based company benefits from its manufacturing infrastructure dedicated to both market segments, optimizing its manufacturing costs. Today, even if Robert Bosch is not an active part of the Apple “ecosystem”, the MEMS player continues to propose low prices and compete with STMicroelectronics (#4 in the 2016 MEMS manufacturers

ranking – US\$630 million in turnover in 2016) and TDK (US\$ 368 million turnover in 2016, including Epcos, InvenSense, and Tronics Microsystems).

Since 2010, TI has maintained its MEMS revenue at around US\$800 million, with its main activity focused on manufacturing micro mirrors. Many applications have emerged, including optical switches for telecoms, barcode readers, 3D gesture recognition, automotive HUDs² or smart lighting, 3D printing, and so on. None of these applications have unsettled the MEMS market and TI’s revenues are mainly due to its projection market segment.

In parallel, both STMicroelectronics and Hewlett Packard reported decreases in their revenue in 2016: STMicroelectronics continues to lower MEMS prices and Hewlett Packard is suffering from the shift from disposable to fixed inkjet heads.

Yole sees many opportunities in the emerging applications that will push forward the MEMS industry and help MEMS manufacturers to ensure their development. In addition to RF applications, audio is becoming an attractive sector, for example, with MEMS microphones already showing 11% growth (in units).³

“The MEMS market will grow further through a combination of functions, dedicated to consumer, automotive and medical applications”, announces **Dr Mounier, Senior Technology & Market Analyst, MEMS & Sensors at Yole.**

Each day, Yole’s experts identify disruptive MEMS & Sensor technologies and highlight the market trends. They analyze the evolution of MEMS solutions and their applications and pinpoint major technical trends and business opportunities. To present these results,

² HUD: Head-Up Display

³ Source: [Acoustic MEMS and Audio Solutions 2017 report](#), Yole Développement, April 2017



Yole's MEMS & Sensors team is taking part in the major trade shows & conferences. Discover the next dates below:

- RF Front End modules for cellphones webcast on June 14 at 5:00 PM CET. To discover the program & register click: [RF Front-End Modules](#)
- Sensors Expo & Conference (June 27-29 - USA): Guillaume Girardin, Technology & Market Analyst, MEMS & Sensors will attend the conference and proposes two presentations focused on IoT⁴. Click [Agenda](#) for more information.
- [Transducers 2017 \(June 18-22 – Taiwan\)](#): Claire Troadec will present Yole's vision on the MEMS & Sensors industry. Her presentation takes place on June 18 at 1:30.
- [The promising future of sensors in the Internet of Things](#) (July 3&4 - Munich, Germany) powered by Yole Développement and its partner [Fraunhofer EMFT](#).

⁴ IoT : Internet of Things

