

RF MEMS SWITCH MARKET

Analysis of the market potential of RF MEMS switches based products in defence, industrial, automotive and telecom applications

WILL THE SUCCESS IN THE INDUSTRIAL FIELD REACH THE CELL PHONE MARKET?

Switching products technologies ranges from traditional Electro Mechanical Relays (EMR) and reed relays to semiconductor switches made of silicon or GaAs materials. A new type of device is currently getting to commercialization. The first sales of RF MEMS switches outside DOD programs have been realized by Teravicta in 2006. The achievements of RadantMEMS in USA DOD programs, the first commercial product sales from Teravicta in 2006 and the 4 other competitors (MEW, XCOMwireless, MEMSTRONICS, Advantest) product introduction in the same year, is a clear sign that RF MEMS switches are gaining momentum.

Market potential is therefore large because MEMS based switches are expected to both:

- substitute existing products
- enable new applications, particularly for mobile phones within short term

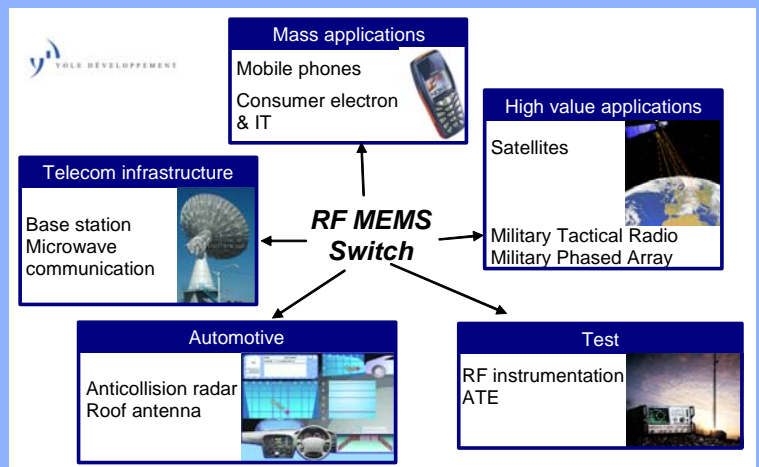
The RF MEMS switch market mainly follows three drivers:

- Weight and size benefit for space and ATE (Automated Test Equipment) applications
- Increased RF switching performance at constant size and cost, for cell phone and radars applications
- Ability to create switching matrix being low cost and good RF performances in wired and wireless telecom applications

What is the technical segmentation?

The large panel of potential applications having strongly different specifications brings additional constrains to product development programs. There is a close relation between the MEMS structure developed and its ability to answer power handling capability of communication radars, or to achieve the appropriate cost structure required by cell phone handset modules.

This lead to a complex market segmentation which should take into account a large set of parameters: Supply voltage, size, and cost structure, RF power handling capability, reliability level, and fit with the supply chain requirements...

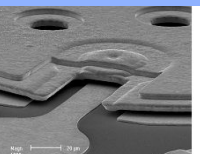
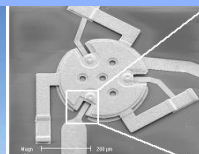


An investigation through the different industries has highlighted that MEMS will only hit a share of the total RF switch market. RF MEMS switches will never replace antenna switches in cell phones because of switching speed limitation for example. The limiting market factors are mainly related to power handling, low RF performance and reliability requirements.

Will RF MEMS switch be able to enter the cell phone billion unit market?

The RF analog from end module is expected to use up to four MEMS switch based features. The goal is to optimize the impedance of the antenna, the power amplifier and the filters in a large range of frequencies. It will support the multiband handset evolution in providing tuneable functions but it faces several challenges:

- What would be the cost structure of MEMS based FEM? What would be the value attributed to the MEMS functions?
- How will module manufacturer business be impacted by these new hardware architectures? Which strategies can be expected? Will it fit with MEMS player strategies?

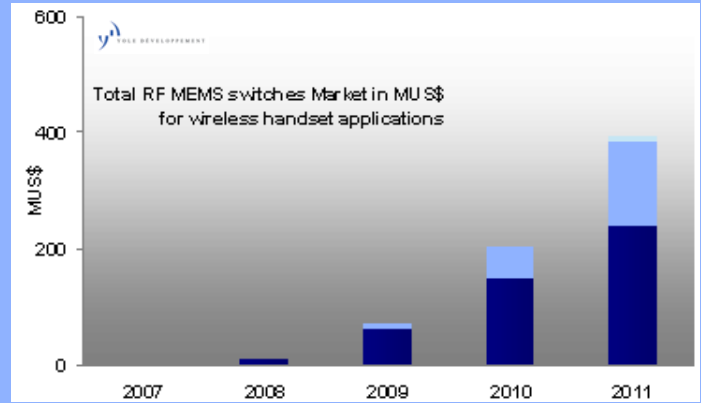




EXHAUSTIVE ANALYSIS OF RF MEMS SWITCH MARKETS

RF MEMS switching products are expected to generate US\$ 390M market in the wireless handset applications in 2011. RF MEMS switch products will nevertheless face several challenges on the 1,5 year period from market introduction:

- Where will be located the first tuneable function? When? Which OEM will lead the trend?
- What are the product specification roadmaps?
- Will product achieve reliability targets at adapted cost structure?
- What is the competitive position of MEMS based tuneable function compare to BST based varicap?



GET A UNIQUE GLOBAL AND IN-DEPTH VIEW OF THE RF MEMS SWITCH MARKET:

- Unique analysis gathering the market data on complex and distinct RF switch market
- Roadmaps for each application to plan programs developments
- Accurate market data to support business planning activities

This report gives an exhaustive analysis of the potential applications. It gives a segmentation of defence, industrial, automotive and telecom field. The market analysis details each application using the following criteria:

- Description of the application and the benefit of RF MEMS switches
- Function and specification requirements for RF MEMS switches
- Description of the final product market players and trends
- Analysis of the competitive technologies and players
- Analysis of the RF MEMS switches market
 - Global market evaluation of the RF MEMS switch applications: component volume in Munits, Average Single Price (ASP), and 2006-2011 value forecasts
 - Description of the products and technologies: product specifications, technological trends and business trends
 - Evaluation of major players market share and potential new entrants

The main challenges facing the RF MEMS switch industries are discussed in order to forecast the evolution of the global MEMS industry and its impact on each market.

This report not only describes the market at the player and application level, but it provide a global view of the RF MEMS switch market allowing to build diversification strategies taking into account technical requirements.

- Report: RF MEMS switch Market
Analysis of the market potential of RF MEMS switches based products in defence, industrial, automotive and telecom applications
- Regular price: Euro 3,990
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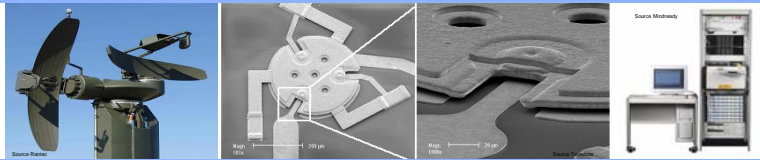


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Who should buy the report?

This report targets companies working in the RF switch industry and the Front End Module manufacturers and suppliers:

- Business development manager will plan and tailor the product development activities to fit to first product introduction or plan diversification strategies
- Sales managers will have market potential (# Munits/year, ASP) and an overview of joint markets.
- Technical directors will find global overview will find the market/technical requirement data to evaluate and scale their new product development projects
- Marketing executives of component and system companies will find key figures for their strategic plans
- Purchasing departments will find data to evaluate risks or new solutions for their sourcing strategies



Bio

Mathieu Potin is leading the MEMS market research activities at Yole particularly inertial MEMS, RF MEMS and MEMS microphone.

He is working with Yole for more than 3 years on marketing analysis & research, due diligence and business plan activities. He was granted a master degree of technology management and a science master degree in semiconductor physics.

Companies described in the report

ADI, Advantests, Agile, Alcatel Space, Anadigics, Avagotech, BAE, Baolab, Bosch, DelfMEMS, Dowky, EADS, Epcos, Filtronics, FreeScale, Hitachi Metal, IBM, Infineon, Intel, Jazz SC, L3 – Narda, Laird, LG, Lucent, M/A COM, MEMStronics, MEW, Motorola, Labs, Murata, NEC, Nokia, Northrop Gruman, NXP, Paratek, Peregrine SC, Philips, RadantMEMS, Radiall, Raphael, Raytheon, RFMD, Rockwell, Samsung, Simpler, network, Skyworks, Sony Ericsson, STMicroelectronics, Teledyne, Teravicta, Thales, Triquint, TRW, TSMC, WIN SC, Wispry, XCOMwireless...

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- Compound semiconductor
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Each day, Yole Développement's team of 18 consultants is in contact with worldwide key industrial companies, R&D institutes and investors in order to help them to understand the markets and technology trends. In its analysis, Yole Développement takes into account the complete value chain including materials and equipment suppliers, device & system manufacturers and devices users.

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