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DMTL Design and Antenna Fundamentals

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CHAPTER 1

INTRODUCTION AND CURRENT USES OF MEMS TECHNOLOGY

1.1. MEMS

With the introduction of Integrated Circuit (IC) technology the ability to produce physically small things has made tremendous strides. The circuits still be used for similar function when downsized by variables, there was race to find ways to incorporate increasing number of circuits into a semiconductor wafer. From the business view, the larger the number of circuits, the higher the benefit. Such production in the IC industry has been achieved, and researchers are inspired to apply the principles of integrated electronics manufacturing to mechanics, optics and fluidics in the expectation that the semiconductor industry can achieve the same performance and cost efficiency improvements. This led to the emergence of MEMS technology.

MEMS is the acronym of Microelectromechanical Systems. MEMS defined as as the integration of miniaturised sensors , actuators and units of signal processing , enabling the entire device to feel, determine and react[1]. Other MEMS engineers consider a standard MEMS system to be [1,14]:

- A computer consisting of micromachines and microelectronics, where micromachines are regulated by microelectronics. Microsensors are also active in the control system by supplying signals to microelectronics.
- A product that is assembled using micromachining technology and an integrated circuit (IC) process, i.e. batch manufacturing technology.
- Device that is built-in, without individual assembly steps for the main parts of the device, except for the steps necessary for packaging..