CHAPTER I
INTRODUCTION

Smart card is becoming popular in the data storage, administration system and security system. Smart card is a type of chip card that a plastic card was embedded with a computer chip that stores and transacts data between users . Card data is transferred to the central administration system through card reading devices, such as ticket readers, ATMs etc. Smart card has two types that consist of contact smart cards and contactless smart card (J. Markarian, 2004). There are many commercial materials which widely used for smart card body ie PVC (polyvinyl chloride), ABS (Acrylonitrile Butadiene Styrene), PC (polycarbonate) and PET (polyethylene terephtarate) (R. Wolfgang *et al.,* 2004).

Smart cards provide many applications. It can be used for identification, authentication, and data storage. Smart card uses a highly-secure and innovative microchip containing both data and security software to make your card nearly impossible to copy and keep your money safe. Majority concern of the smart card is the service lifetime. Service lifetime is the acceptable period of use in service. Service lifetime is a unique commitment made by the item's manufacturer or the maximal recorded life of a product. It is one of factor for increase value of a product.

Service lifetime reduction caused from deterioration of the materials. Important factors that deteriorate material when use in outdoor condition are moisture, light and temperature. If doing the testing conditions used by the product placed outdoor exposure, the results could take many months or years. Therefore, in order to reduce testing time and to speed up experiment within laboratory conditions, accelerated weathering tester is often used in experiment. Exposure hours of accelerated weathering tester help to compute years of outdoor exposure. The results used to predict service life outdoor or in the in-service environment. But the problem is the inherent variability and complexity of outdoor exposure situations.

The purpose of this work is to study the correlation between the degradation in accelerated weathering in exposure and outdoor exposure of the smart card body (PVC, PC and PETG). Then, evaluation the visual inspection and physical properties

of card after testing in various conditions. Another objective is to allow the results identifying the service lifetime of smart card.