

## **Performance of Ultra High Frequency Gen2 Passive Tags Radio Frequency Identification in chemical laboratory environment**

### **ABSTRACT**

This research analyzes the performance of Ultra High Frequency (UHF) Gen2 Passive Tags Radio Frequency Identification (RFID) technology as sensing device in chemical laboratory environment. The purpose of this paper is to verify the effectiveness of using RFID for tracking chemical bottles during inventory process in a laboratory. In most laboratories, the chemical tracking process is still being done manually which is very time consuming. The advantages of RFID operation will help to enhance the effectiveness of chemical inventory management and reduce the process time. An experiment in a laboratory was done to verify the performance of detection rate according to the specifications stated in the manual data sheet. Pre-programmed RFID passive tags were affixed onto chemical bottles and then scanned using RFID reader to detect all output data in a controlled environment. The result showed that certain conditions such as material of the container, tag-reader orientation and the size of chemical bottles play important role to get detected for this type of RFID. From the result, the paper suggested some guidelines to be taken care of during scanning process to get higher percentage of reading rates.

**Keyword:** RFID tag detection rate; Bending diameter; Orientation sensitivity