

## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 Background**

Due to the flash flood that recently occurred, lots of victim those are not capable to save their important documents like their Identity Card (IC), birth certificate, etc. The problem caused by their unprepared and unexpected about having a flood especially in unconscious condition such as when they were sleeping.

Therefore, 'Flood Detector' is proposed to overcome the problems addressed above. The idea of Flood Detector is designed to help the community to be more alert if the flash floods occur even when they were sleeping. Furthermore, the flood detector will give them enough time to save their important properties and they also can alert their neighbours about the flood which is about to occur and ask them to take the smart action.

This chapter explains the idea of Flood Detector, the Bluetooth technology and the capability of applying the Bluetooth technology to the flood detector. The project objective and the scope of the project are also described in this section.

### **1.1.1 Flood Detector**

A flood is an overflow of an expanse of water that submerges land, a deluge. Flood is one of the biggest disasters which cause properties destruction and also can cause fatal. Most of the places in Malaysia can't get rid of being flooded, even the most sophisticated city, Kuala Lumpur. Flood detector is a system which provides an early warning of flood situations. The warning might be an alarm, water level indicator by using light-emitting diode, text display, etc. With flood detector, user can be more alert when flood occur especially in unconscious condition such as when they were sleeping besides they have enough time to save their important properties. Flood detector can contribute to better comfort levels and at the same time optimize the safety precautions toward the flood.

### **1.1.2 Bluetooth Technology**

Developments in the area of wireless data transmission during the last few years, allowed many applications which implemented using wired connections in the past were replaced by wireless system. Bluetooth protocol has recently gained enormous popularity and has been widely used in many consumer applications. The technology is capable of transmitting data and voice at half-duplex rates of up to 1 Mbps. The Bluetooth employs low power consumption and does not require a license for spectrum use in most countries. Bluetooth network attempts to provide significant advantages over the other data transfer technologies, such as IrDA, Home RF and wireless LAN [1]. The capability of Bluetooth and limits connectivity is quite suitable to be implemented for flood detector in home environment.

## 1.2 Problem Statement

Most of the existing flood detector used Radio Frequency (RF) as transmission medium. Low-power radio wave is a natural medium to use for simple control and monitoring applications where there is a desire to minimize the installation. This medium easily covers the entire house without using any repeaters, but inadvertent transmission to neighbouring houses must be avoided. A crowded frequency spectrum tends to push available frequencies higher and higher. As a consequence, the devices tend to be affected by standing waves, so that positioning of devices can be a problem.

Most of the existing flood detector uses one to two water sensors which will give a signal when the sensor detects water. For the system which uses one sensor, the system will produced a signal when the sensor detects water without knowing the level of the flood. In order to get more reliable detection about the flood, more than two sensors can be used in designing the flood detector. Therefore, the system can show the status of the flood to the user so that the user can estimate the time left for them in order to save their important properties from damage.

Some system for flood detector consists of one part only and not involved the transmission process. In other word, the system did not transmit the signal to other places/rooms for warning alarm or alert signal. This might be a problem if there is heavy rain occur and the user which is in the house did not notice about the flood and also did not hear the alarm signal produced by the flood detector as it is located outside of the house. Therefore, a system which has a transmitter part and receiver part is needed so that the receiver part can be placed near to the user and can alert user when flood occur.

Most of the previous projects using wires to control the alarm or other alert signal. However, using wires to control the flood detector can sometime be troublesome, especially when the house is fully constructed. The wires can no longer be installed inside the drywall but has to make it way from the controller or server to the appliances via visible path on the surface of the wall. When too many appliances